Convention Report Issue

ELECTRICAL WEST

June 1956
25 Cents

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U. S.

RMEL
Denver

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Western Meetings

NECA
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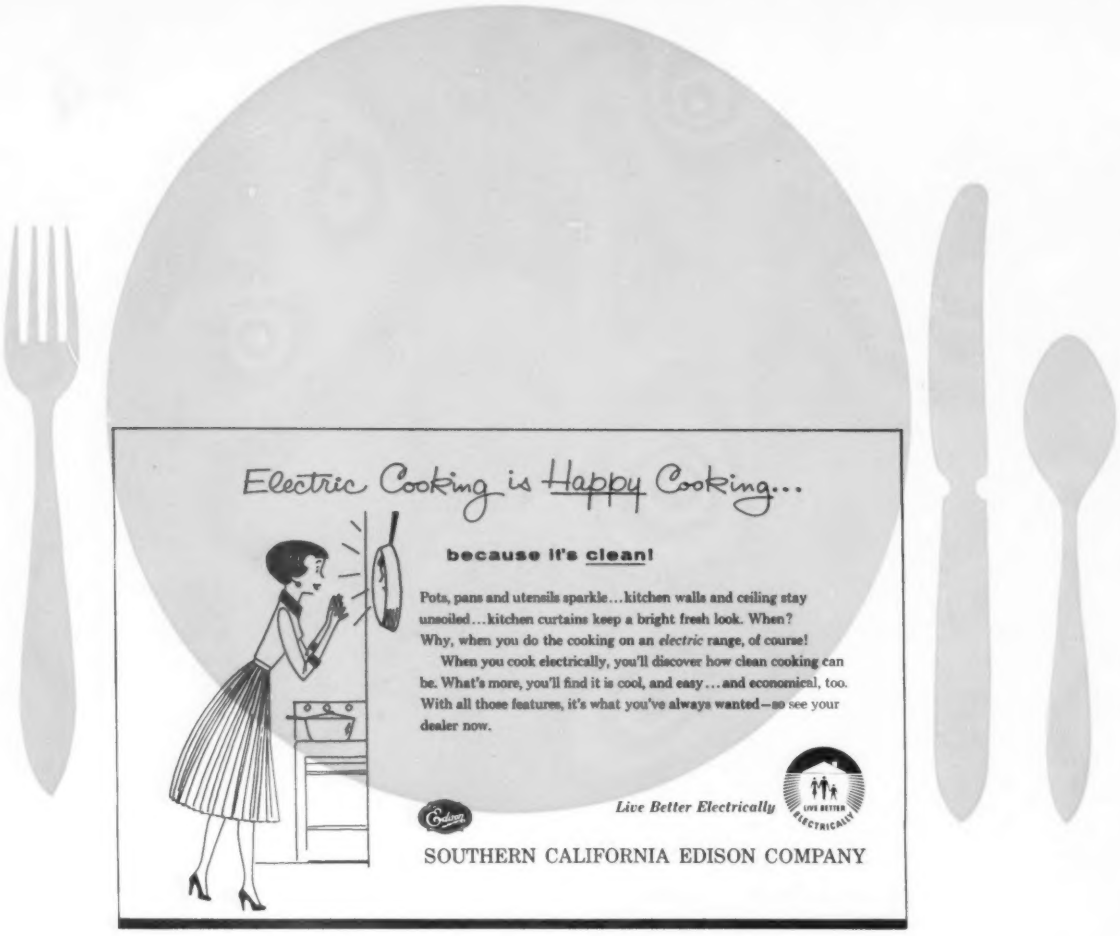
Regional Conferences


Electric Cooking is Happy Cooking...
because it's clean!
Pots, pans and utensils sparkle...kitchen walls and ceiling stay unsoiled...kitchen curtains keep a bright fresh look. When? Why, when you do the cooking on an *electric* range, of course!
When you cook electrically, you'll discover how clean cooking can be. What's more, you'll find it is cool, and easy...and economical, too. With all those features, it's what you've always wanted—so see your dealer now.
Live Better Electrically
SOUTHERN CALIFORNIA EDISON COMPANY

HAPPY THE BUYER... AND THE SELLER!

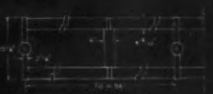
Warm weather generally poses a meal preparation problem. Light diets don't always satisfy heavy appetites . . . heavy meals don't always make for cheerful cooks. But there is a solution: cooking which is easy, automatic, clean and cool . . . fine for preparing meals on even the hottest days. In short . . . *electric* cooking.

Basically, that's the thinking behind the cheery and light-hearted Edison summertime advertising on electric ranges. In newspapers everywhere in Edison territory, they are singing a song of happiness aimed at bringing customers into the stores of electrical appliance dealers.

Their theme: "Happy the homemaker who does her cooking electrically!" It's a catchy refrain, one which alert appliance dealers will find it pleasant—and profitable—to take up in tie-in advertising.

SOUTHERN CALIFORNIA EDISON COMPANY

Good Service, Square Dealing, Courteous Treatment



features:

- Utilizes new 800 MA high output lamps
- May be mounted within 12" of ceiling
- Meets ASA school standards
- High adaptation level with low brightness and brightness ratios
- Flexible in arrangement

NEW SMOOT-HOLMAN LUMINAIRE

PERFECT VISION

When all cost factors are considered, Smoot-Holman's Perfect Vision indirect luminaire will be the choice for commercial, school and institutional lighting requirements. Its revolutionary "new as tomorrow" design gives more light per dollar than ever thought possible . . . yet continues Smoot-Holman leadership in quality and efficiency.

Investigate the many advantages of this excitingly new, architecturally beautiful luminaire. Contact your local Smoot-Holman office or write direct for Catalog PV-288. **SMOOT-HOLMAN** *Inglewood, Calif.*

WE SUPPORT THE NATIONAL LIGHTING BUREAU

SERVICE IN THE WEST AND SOUTHWEST FOR ALL SCHOOL, COMMERCIAL AND INDUSTRIAL LIGHTING

ELECTRICAL WEST

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U. S.

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Next Month

Of interest will be a review of foreign extra-high-voltage transmission practice. Also there will be a report on the summer general meeting of AIEE held in San Francisco, June 25-29. Articles will cover load-frequency control, higher utilization voltages, new distribution practice, electric heating of a large office building and new tree-trimming practice.

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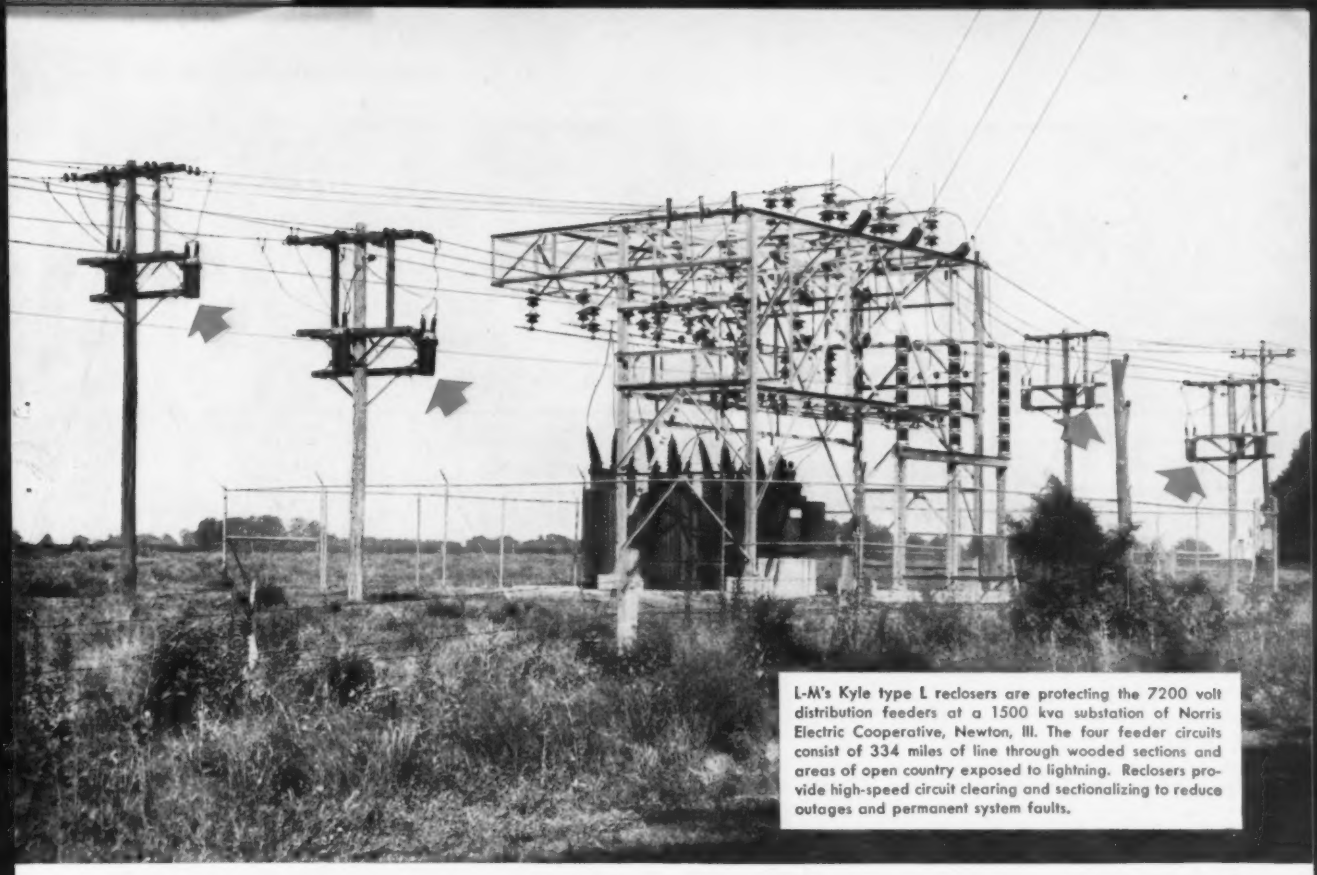


L-M's Kyle type L reclosers are protecting the 7200 volt distribution feeders at a 1500 kva substation of Norris Electric Cooperative, Newton, Ill. The four feeder circuits consist of 334 miles of line through wooded sections and areas of open country exposed to lightning. Reclosers provide high-speed circuit clearing and sectionalizing to reduce outages and permanent system faults.

Pole-Mounted Kyle Reclosers Serve As Automatic Disconnecting Device

L-M Kyle reclosers provide high-speed circuit clearing of feeders for transient fault protection and automatic disconnecting of permanent faults with minimum substation investment.

By **JOHN A. SCHWENKE**
Field Engineer
Springfield, Ill., Office
Line Material Company

The relatively high cost of circuit breakers and associated substation equipment has been eliminated at the Dieterich substation of the Norris Electric Cooperative, Newton, Ill. Kyle type L reclosers have been installed on the four 7200 volt distribution circuits to serve as the disconnecting device. These reclosers are completely self-contained and fully automatic.

In addition to segregating permanent faults from the system, L-M's Kyle reclosers provide the high-speed circuit clearing (2-cycles maximum) required to reduce conductor burndown resulting from transient or non-persistent causes.

Reduce Permanent Faults

Transient fault protection is available through coordinated operation of the substation recloser with reclosers and sectionalizing fuses on the feeders. It is possible to clear up to 90 percent of transient faults, reduce permanent faults, and secure these outstanding advantages with L-M reclosers:

- Less serious damage to conductors and equipment.
- Confining of trouble to small area.
- Increase revenue because outages are reduced.
- Greater service continuity.
- Aid in maintaining good public relations.

Kyle reclosers offer the widest choice of time-current characteristic curves and operating sequences. And only L-M offers the fully coordinated series of reclosers and sectionalizers that permits complete automatic protection.

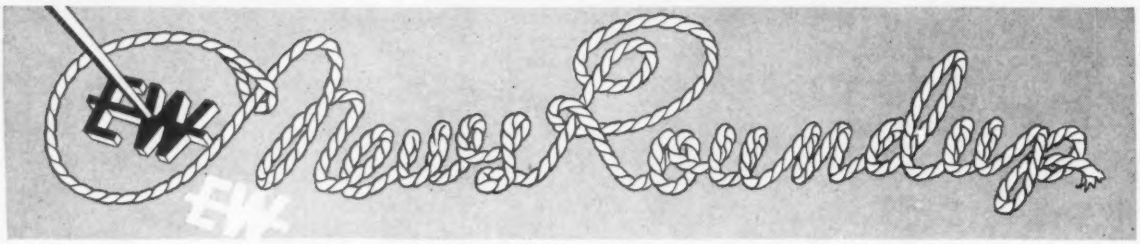
Get the Whole Story on L-M's Kyle Reclosers and Sectionalizers

Ask your L-M Field Engineer for information and bulletins on Kyle apparatus and complete coordination—single- and three-phase—from substation to load. Or write Line Material Company, Milwaukee 1, Wisconsin. In Canada: Canadian Line Materials, Ltd., Toronto 13, Ontario.

255

LINE MATERIAL Kyle® Reclosers

A McGRAW ELECTRIC COMPANY DIVISION



SIGNIFICANT ITEMS FROM THE EDITORS' NOTEBOOKS

RAINMAKING is an intriguing subject, especially since it might have the potential of actually controlling water supplies from nature so runoff, and subsequently generation of electricity, might eventually be partially regulated by cloud seeding.

But it's hard to get accustomed to the practice, and now the rainmakers have uncorked another idea that shakes up the imagination. North America Weather Consultants of California has introduced a tentative plan to "fireproof" forests in British Columbia. Officials of the company have outlined the plan to the B. C. forestry service. Ted Crosby of NAWC said he is confident his company "can keep the forest areas wet enough so that you won't need any closures." Forests are often ruled off-limits during dry summers.

—EW—

"Let's eliminate the word 'saturation' from our vocabulary," says C. C. Walker, G-E. "If we must use a term to describe a market potential, let's use the word 'acceptance.' While saturation implies stagnation, or the end of the road, acceptance is dynamic, capable of being constantly expanded to keep up with the demands of modern living."

—EW—

DENVER AREA is buzzing with new building activity as the Zeckendorf combined hotel and Daniels & Fisher store begins growing out of the "hole in the ground" that was once Court House Square.

A couple of blocks away the old Sea Hotel, a pioneer, recently fell to the wreckers and the Murchison Building to house the First National Bank is rising in its place.

Nearby, Littleton is soon to have the Glen L. Martin plant and the Ramo-Wooldridge plant to be built by the Los Angeles electronic system manufacturer.

The Air Force Acadamy near Colorado Springs is bringing a surge of building activity in that area. Even the old Antlers Hotel, recently bought by Ben Swig of San Francisco, is being completely modernized electrically. Shopping centers, new de luxe tract home areas and others are keeping the trade busy.

—EW—

GREEN LIGHT—May 4, 1956, may become a historic day for the industry. On that date, the Atomic Energy Commission issued the first permits for private construction of large-scale nuclear power plants. Thus the Consolidated Edison Co. of New York and the Commonwealth Edison Co. of Chicago have an official "go ahead" on their proposed atomic power stations.

Each construction permit allocates special nuclear materials to be made available over a 40-year period for use as reactor fuel. The amounts calculated for the 40-year period are, for Consolidated Edison, 5,699 kg of U-235; for Commonwealth Edison, 8,323 kg of U-235.

—EW—

Financing of home wiring modernization is being tried by two more Northwest utility companies. Both Pacific Power & Light Co. and Montana Power Co. have launched programs in which the company offers financing on 12-, 24- or 36-month basis. Montana Power has also offered $25 certificates to apply on new electric ranges, to people using gas, wood or coal. The certificates are good at all dealers.

—EW—

Although an area for an additional 100 booths was included in the plans for the 1956 Western Electronic Show and Convention, exhibitor space is already a sell-out. It will be at the Los Angeles Pan Pacific Auditorium Aug. 21-24.

HELP WANTED—We've heard two names ghosted around as possible successors to Ancher Nelsen, who is leaving his post as REA administrator to try for Minnesota's governorship. One of the two is David A. Hamil, speaker of the Colorado House of Representatives, the other is Daryl Dunn, Kansas administrator for the Farmers Home Administration.

Dunn has Nelsen's support for the appointment, and has the possible advantage of having been appointed to his present post by President Eisenhower.

Nelsen, pitching his hat in the Minnesota ring as "an Eisenhower aide in the field," has assigned himself a pretty rough chore but his REA job has probably conditioned his skin for it. He'll be bucking a powerful Democrat-farmer-labor coalition that will try to get Gov. Orville Freeman re-elected.

—EW—

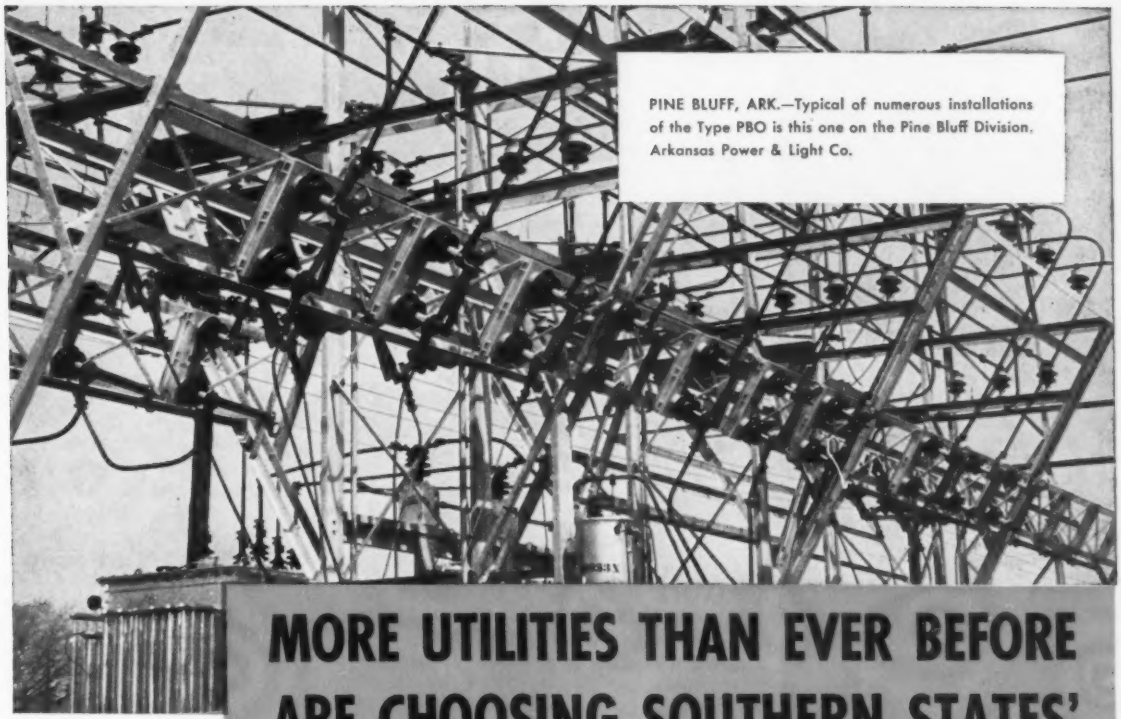
More copper is promised soon by the copper industry and the price of the metal seems to be settling a point or two in recent quotations. The Copper & Brass Assn. predicts that the free-world copper mine capacity should be 15% greater by 1958. Foreign consumption and demand has shown some decline, whereas production has increased both in domestic and foreign mines.

—EW—

CONGRATULATIONS to Wallace L. Chadwick, vice-president in charge of engineering and construction, Southern California Edison Co., and to Herbert V. Strandberg, chief engineer, Department of Lighting, city of Seattle. Both men were recently named fellows of the American Institute of Electrical Engineers for notable achievements in their fields.

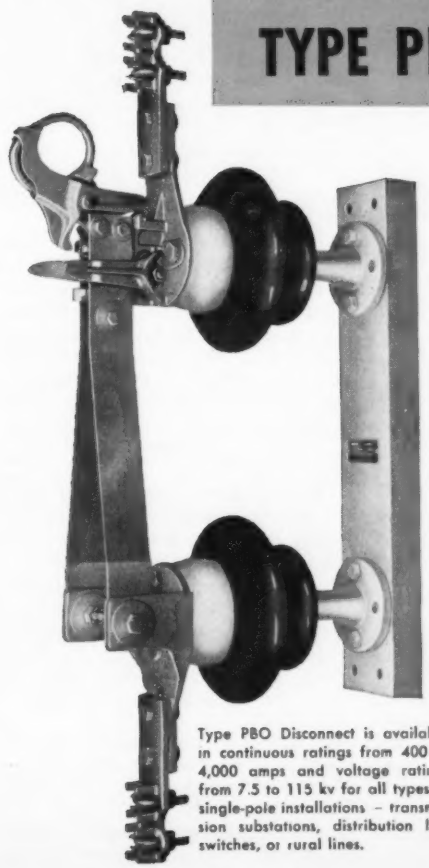
The honor was bestowed on six others in the nation.

Chadwick's citation states, " in recognition of his engineering and ad-



PINE BLUFF, ARK.—Typical of numerous installations of the Type PBO is this one on the Pine Bluff Division, Arkansas Power & Light Co.

MORE UTILITIES THAN EVER BEFORE ARE CHOOSING SOUTHERN STATES' TYPE PBO DISCONNECT SWITCHES



Type PBO Disconnect is available in continuous ratings from 400 to 4,000 amps and voltage ratings from 7.5 to 115 kv for all types of single-pole installations – transmission substations, distribution line switches, or rural lines.

The growing popularity of the Type PBO Disconnect, for substation and distribution line switching, can be attributed to the preference of utility engineers for these outstanding features:

HIGH PRESSURE double-line contacts. Positive contact assured by wiping action of accurately machined surfaces. Hard drawn copper bus bar blades: double blade construction. 90° open blade stop unless otherwise specified.

EXTRA LARGE OPERATING RING of heavy duty construction.

POSITIVE LATCHING of blade in the closed position prevents opening under fault currents or from vibration.

BLADE PRY-OUT applies a powerful mechanical force to open the blade even under heavy coatings of ice.

CAST BLADE GUIDES are rigid and wide-flaring to position the contacts properly on each closing operation.

STEEL BASES, hot-dipped galvanized after fabrication, are available to specification.

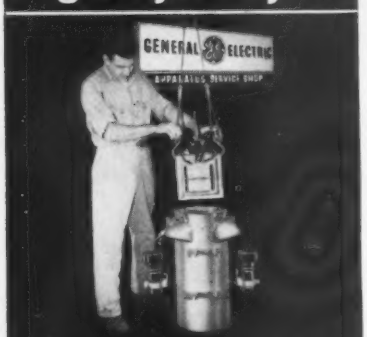
Full details are contained in our Bulletin 55 PBO, a copy of which will be mailed gladly upon request.

SOUTHERN STATES
EQUIPMENT CORP.
HAMPTON, GEORGIA

IN CANADA: Dominion Cutout Co., Ltd., Toronto

Rescued from

graveyard by



G-E Service Shop

Get your obsolete distribution transformers back on the pole again—as good as new! Just call your local G-E Service Shop. We'll rebuild them ...uprate them 40% or more ...and return them with new-transformer warranties. There are 31 G-E Service Shops throughout the country—one near you. 431-31

Progress Is Our Most Important Product

GENERAL ELECTRIC

ministrative achievements in directing design and construction in one of the nation's large power systems."

Strandberg's citation says, "for his accomplishments in the development of a transmission and distribution system to supply electricity to a metropolitan area."

—EW—

Norma Pencil Corp. of New York has come up with a suggestion on what to get for the person who "has everything." They suggest two of their mechanical pencils—a platinum job for $500 and a palladium scriber for $250. The price might seem high at first, but you must consider that they have four different colored leads in one pencil.

—EW—

PAYOFF of another $25,000 by the Tacoma Utilities Board to the Washington State Fish & Game Departments was done with understandable reluctance last month. The money is to be used for studying the habits of commercial and sports fish in the Cowlitz River—which the city wants to dam and the departments want to preserve as a fish sanctuary.

So, Tacoma has paid a total of $94,519 to the agencies that are giving it the most trouble in opposing Mayfield and Mossyrock Dams.

Cooperation with the agencies is written into the FPC license for the project, though, so Tacoma's position in the courts is better if "our good faith, efforts and funds to cooperate are shown," according to Utilities Director Dean Barline.

—EW—

An electric "Bunsen" burner developed by a high school student in Portland could eliminate the one remaining need for gas in school, industrial and commercial laboratories.

—EW—

NIAGARA development by the government has drawn active opposition from about 200 organizations in New York with the New York State Grange acting as leader.

In an appeal sent to Chairman Dennis Chavex of the Senate committee on public works, the groups said it is "contrary to the public interest to construct and operate power-generating facilities under government auspices."

GIANTS—Philip Sporn's American Gas & Electric system has chalked up another first. Orders were placed last month for two 450,000-kw generating units, capable of a 73% greater output than any generator now operating.

Steam pressure will be at the supercritical level of 3,500 psi and the steam generator for each unit will require 1,300,000 tons of coal per year.

Babcock & Wilcox will build the boilers (each as high as a 23-story building) and General Electric will build the turbogenerator units. Price tag for each unit: $55,000,000.

—EW—

Con Edison of New York drew an interesting parallel in its employee publication. We quote: "If you really want to get the true measure of a man, wait until he has to pick himself off the deck . . . It's a far cry from the prize ring to the utility business (or is it?), but the latter arena also brings out the basic qualities of courage and confidence."

—EW—

CHINTZY is a mild name for some of the things perpetrated on the public by the table and floor lamp makers, who are now protesting over the West's sales control ordinances that require at least UL labeling for safety.

Some Portland retailers complained that as long as the cities do not enforce rewiring they should overlook the lamps that are sold for the inadequate circuits.

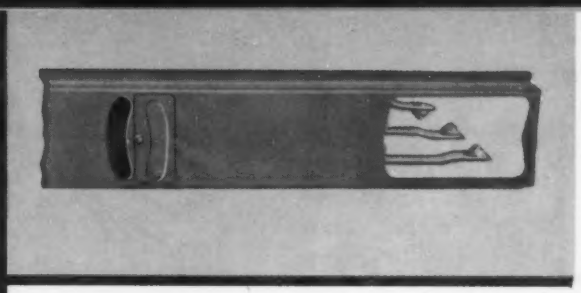
What retailers and cheap lamp manufacturers do not appreciate is that most fires and accidents come from equipment used from the outlet out and not inside the walls in the wiring. That the "lamp industry could police its own problem" is gross ignorance of human nature, if not phony.

—EW—

An expansion program for the Western Merchandise Mart in San Francisco, involving the expenditure of nearly $750,000, is the initial step taken by Marvin Kratter, who heads up Mart Associates, the new leaseholders of the building.

—EW—

WAGES—Labor contract negotiations between the Salt River Power District (Phoenix, Ariz.) and Local Union 266 of the IBEW were concluded on May 4. The wage increases negotiated vary from 4½c per hour for



STANDARDIZED 10′ SECTIONS have 10 plug-in openings—5 on each side. Exclusive crescent-shaped openings insure proper insertion of plugs and accommodate plugs from 30-amp to 600-amp capacity.

PLUG-IN POWER INSTANTLY . . . BullDog bus plugs are equipped with reinforced fingers to engage bus bars for maximum positive pressure contact. Compact design and minimum weight insure ease of installation, full use of plug-in openings.

MORE SAFETY–
MORE SATISFACTION–
MORE SAVINGS

...WHEN YOU INSTALL BULLDOG PLUG-IN DUCT

Keeps pace with your power needs today and tomorrow!

A sound investment—now and in the future! Installing BullDog Plug-In Duct for branch circuits provides a flexible distribution system to meet all immediate and future needs.

Plugs are designed exclusively for BullDog Plug-in Duct . . . offer safe, convenient tap-off and positive branch circuit protection. They mount on either side of the duct with ease, speed and safety—are so compact they permit maximum use of duct openings. Safety-engineered to insure correct polarization, the plugs *cannot* be inserted improperly.

Seven different, interchangeable plugs—Vacu-Break®, Fusible, Circuit Breaker, Capacitor, Transformer, Ground Detector, and Temperature Indicating—provide a type and size to meet every application.

These and other advantages make Plug-In Duct first in its field . . . add up to more safety, satisfaction and savings for you. See your BullDog field engineer or qualified contractor for details or write BullDog Electric Products Company, Detroit 32, Michigan.

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IF IT'S NEW... IF IT'S DIFFERENT... IF IT'S BETTER... IT'S

BULLDOG

ELECTRIC PRODUCTS COMPANY

A Division of I-T-E Circuit Breaker Company

Export Division: 13 East 40th Street, New York 16, N. Y. • *In Canada:* BullDog Electric Products Co. (Canada) Ltd., 80 Clayson Road, Toronto 15, Ont.

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BULLDOG ELEC. PROD. CO. OF LOS ANGELES
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the NEW prize-winning look in LIVING LIGHTING
Cadillite
ORIGINAL AIR-COOLED
ULTRA-SHALLOW FLUORESCENT
LUMINOUS DIFFUSER
LUMINOUS SIDE COMPONENTS
Consider the facts—Cadillite actually separates ballast from lamp assembly, enclosing it in an air-bathed chamber. RESULT: heat from ballast and lamps no longer combine as in conventional designs. Cooler operation yields greater lumen output, higher efficiency and longer ballast life. And there's a plus—luminous sides to spread atmosphere into ceilings! All this at no additional cost. Write for details.
PEERLESS ELECTRIC CO.
576 FOLSOM STREET, SAN FRANCISCO
living lighting by PEERLESS

the laborer classification up to 16c per hour for linemen.

Typical of the new wage rates, which were made effective April 1, 1956, are as follows: laborers $1.46½ per hour, heavy truck drivers $1.92½ per hour, electricians $2.55 per hour and linemen $2.60 per hour. In the clerical group, keypunch operators will receive $1.56 per hour, senior clerks $1.79 per hour and accounting clerks $2.15 per hour.

The contract, which will be effective for one year, will increase the annual hourly pay roll of the system to $2,500,000 per year.

—EW—

For research into lighting, Southern California Edison Co. has increased its annual contribution to the Illuminating Engineering Society's research fund. The increased grant was formalized at the company's Los Angeles office when John H. Mead, Edison vice-president, and Roy E. Dahlin, supervisor of lighting development, presented a check to R. H. Hartenstein, IES national president. The latter was in Los Angeles to address the Electric Club.

One Salt Lake contractor has a busy schedule ahead. Wasatch Electric Co. will make the installation at the Deer Creek power plant for the Bureau of Reclamation, two pumping plants for the Weber Basin project, the electrical installation from the Hercules Powder Co. plant moving from California with double its facilities, a uranium mill in Moab and the Highland high school being erected on the old prison site.

—EW—

THINK how $269,000,000 could help the electric power supply of the 11 Western states. That's our proportionate share of $1,950,000,000 appropriated to TVA in fiscal 1934 through fiscal 1955.

Breaking it down a bit more, California has contributed $170,000,000 to the welfare of Tennessee, and Washington kicked in $31,000,000. The folks in Tennessee paid $24,000,000. Colorado and Oregon aren't far below the Tennessee figure.

This lesson in economics was published by George Peck, chairman of the Laymen's National Committee, sponsor of National Sunday School and Bible Weeks.

DEFINITION—Do you know the meaning of the word "automation"? If not, here is the definition as formulated by the Radio-Electronics-Television Manufacturers Assn.:

"Automation is the technique of improving human productivity in the processing of materials, energy and information by utilizing, in various degrees, elements of self-control and of automatically executed product programming."

—EW—

High-energy irradiation of the extruded polyethylene insulation on wires permits continuous operation at temperatures of 300 F. Cobalt-60 is the source of gamma rays moving at nine-tenths the speed of light. Plastics have thus entered the high-temperature field.

—EW—

DENTED LIGHT TUBES produce more light, even as dented fenders produce more heat.

General Electric has announced at the regional IES conferences and recently to the press what it calls a "power groove," a series of lengthwise dents or grooves along one side of an 8-ft-long fluorescent lamp of larger diameter.

Increase of lighted tube surface area and higher wattage operation makes possible doubling the light output per linear foot. Also requires new ballasts and will cause a rash of new fixture designs to control a greatly increased brightness.

—EW—

Pacific Gas and Electric has filed a new service rule with the California commission under which the utility will supply 265/460-v service to a single customer at a single delivery point where the demand is not less than 1,200 kva as determined by the company.

—EW—

SHIFT—Automobiles are pacing a downward trend in consumer spending. In general retail buying the first third of 1956 has been less than expected and particularly so in the hardgoods area such as appliances and TV. Consumers, on the other hand, have been paying off installment credit obligations considerably faster than they have taken on new debt. They are, however, spending more for non-

Easy on...
Easy off

KEARNEY
CON-NEC-TAP
CLAMPS

COMPLETELY enclosed in a grease-filled chamber, the protected threads of CON-NEC-TAPS make them easy to install and just as easy to take off, months or even years later.

This KEARNEY feature eliminates the necessity of ever having to cut clamps off the line—and cuts costs by enabling you to use CON-NEC-TAPS over and over again.

A heavy, double-coil spring washer resists vibration and compensates for contraction or expansion—assuring high pressure contact at all times. KEARNEY CON-NEC-TAP CLAMPS are available for all types and sizes of conductors. Make a note now to check your stock.

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SAFER MAINTENANCE
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The Mark of Quality PRODUCTS

MAYDWELL & HARTZELL, *INCORPORATED* • WEST COAST DISTRIBUTORS • Los Angeles • San Francisco • Portland • Seattle • Spokane • Phoenix

FANNER
Superformed
LINEGUARDS
provide lowest cost protection on SHORTSPAN CONDUCTORS

Fanner Superformed LINEGUARDS give short span distribution lines complete protection against abrasion, arcover, or clamp or tie wire damage at lowest possible cost. They have the same features of ease of installation, lasting durability and reuseability as Fanner ARMOR RODS, but are smaller in wire size and shorter, therefore cost far less: It's good economy to use Fanner LINEGUARDS on short spans with low tensions (1) at support points to protect against clamp or tie wire damage, (2) to provide a protective layer for tapping purposes, (3) at expulsion-gap or other critical locations. Further information and prices on FANNER Superformed Lineguards will be furnished on request. Write today.

Other FANNER ELECTRICAL LINE PRODUCTS

ARMOR RODS	PATCH RODS	TAP ARMOR	PLASTIC FANNGUARDS
• For protection against vibration damage and also good for emergency repairs on partially broken overhead lines.	• Act as a "repair sleeve" for conductors having up to about ¼ of the wires broken in the outer layer.	• Provides a protective layer of shortened rods on conductor for making taps without risking damage to conductor.	• Tough, durable spiral wound plastic sleeves that snap together over covered wires and cables to provide protection against tree abrasion.

Licensed for use under Patent No. 2,275,019

THE FANNER MANUFACTURING CO.
Electrical Products Division
Brookside Park Established 1894 Cleveland 9, Ohio

AGENTS AND DISTRIBUTORS IN PRINCIPAL CITIES

durable goods and on services, things that don't involve long-term commitments.

Spending for capital goods is moving at a record rate as business and industry expand and modernize. Current figures make it a sure bet that the country will have $35 billion of new industrial plant by the end of the year.

—EW—

NEW WORD—If you see reference to the "Electomic Age" (yes, it's spelled right), don't be surprised.

This new coined word was used by Van H. Leichliter, American Steel & Wire's vice-president, in speaking before the Pennsylvania State Chapter of the American Society for Metals. He used it to express the wedding of electronic wizardry and atomic forces, a union which promises mankind an abundant future.

At the occasion, Mr. Leichliter was presented the MacFarland Award, instituted by the Penn State Chapter of ASM to honor Penn State alumni for achievement in metallurgy.

—EW—

SPACE HEATING CODE—Portland has a new electric space heating code (Ordinance No. 77094), designed to protect home owners from inadequate installations where electric heating is the principal source of heat.

It prescribes that wattage be sufficient to supply heat losses when the outside temperature is 15 F. An electric-heating and a wiring permit are required. Both resistance heating and heat pumps are included in the code.

—EW—

WAGE INCREASES in the electrical construction industry are going to be felt after July 1 throughout the West.

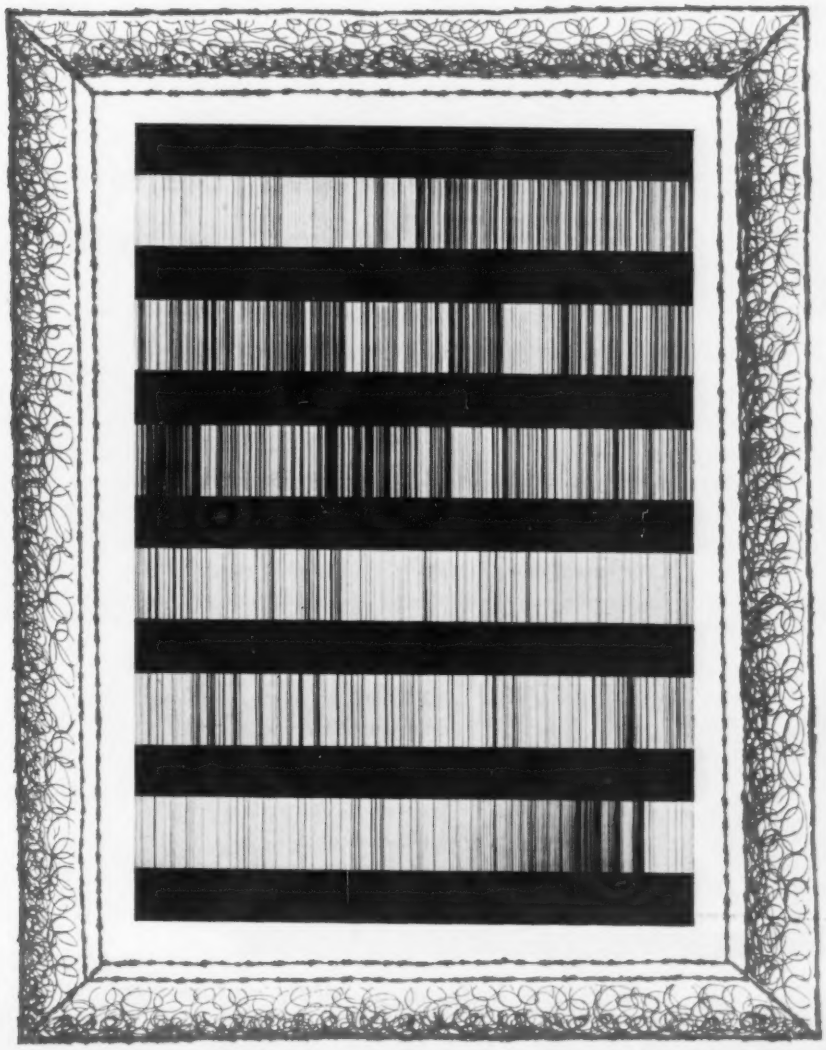
Los Angeles set a new pattern when it agreed to $3.60 per hour for journeymen electricians. San Fransicso, without a murmur of protest, agreed to a package totaling $3.61 per hour including fringes and an increase in health and welfare.

This may be reflected throughout California. Similar increases have been asked in the Northwest.

—EW—

A recent poll of Seattle Republicans revealed that power policies rank pretty close to the basement (11th) as a presidential campaign issue. About 83.8% approved President Eisenhower's partnership program, though.

PORTRAIT OF A CHAMPION



Nichrome*, the famous alloy whose spectrogram you see here, is as truly a masterpiece as any Rembrandt or DaVinci hanging in the galleries—and for largely the same reason.

For the principal elements in Nichrome, *anyone* can combine. What gives Nichrome its unapproachable superiority over all other heat-resistance alloys, is the truly personal elements that go into its making—the all-important, highly specialized skills of the Driver-Harris technicians.

Step-by-step from melting through every processing operation, from furnace to finished spools of wire (some drawn as fine as .0005 dia.) exacting metallurgical controls and checks operate to assure the peerless and enduring qualitites of Nichrome. These quality controls represent 58 years of continuous alloy research that have established Nichrome as the time-tested standard by which all similar alloys are measured.

Yes, there is only one Nichrome, and it is made only by Driver-Harris.

And in recognition of its unique properties, the United States Patent Office in August, 1908, granted solely and exclusively to us the trade-mark NICHROME.

*T. M. Reg. U. S. Pat. Off.

*Driver-Harris** COMPANY

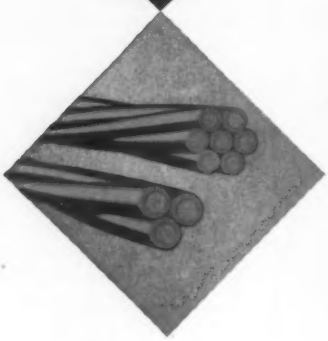
HARRISON, NEW JERSEY

BRANCHES: Chicago, Detroit, Cleveland, Louisville, Los Angeles, San Francisco • In Canada: The B. GREENING WIRE COMPANY, Ltd., Hamilton, Ontario

MAKERS OF THE MOST COMPLETE LINE OF ELECTRIC HEATING, RESISTANCE, AND ELECTRONIC ALLOYS IN THE WORLD

From the day they're installed...

and throughout the entire life of the line...



Copperweld Guys give safe, strong support at lowest cost per year!

The permanent high strength of Copperweld* Guy Strand means permanent support for your overhead lines year-in and year-out. Guy repairs and replacements are eliminated once and for all. There's no doubt about it—the few extra pennies you pay for Copperweld Strand buy many extra years of dependable guying service. Why not start using Copperweld now—and save on upkeep every year for the life of your lines.

*Trade Mark

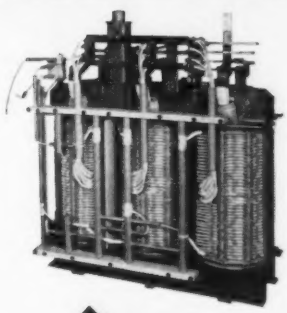
COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION
Glassport, Pa.
For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

***The Best* in Terms of Safety and Service!**

From coast to coast...

Allis-Chalmers Network Transformers

Are meeting growing system needs with long-term, reliable operation. Compact design, rugged construction, and easy maintenance features make A-C transformers your best buy for network expansion. Call your nearby A-C office for information, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wis.



COMPACT, LOW-LOSS DESIGN

Thermal capacities are high for severe load conditions. Sturdy, time-proved core and coil construction meets repeated short-circuit stresses of network operation.

PAN-TYPE RADIATORS

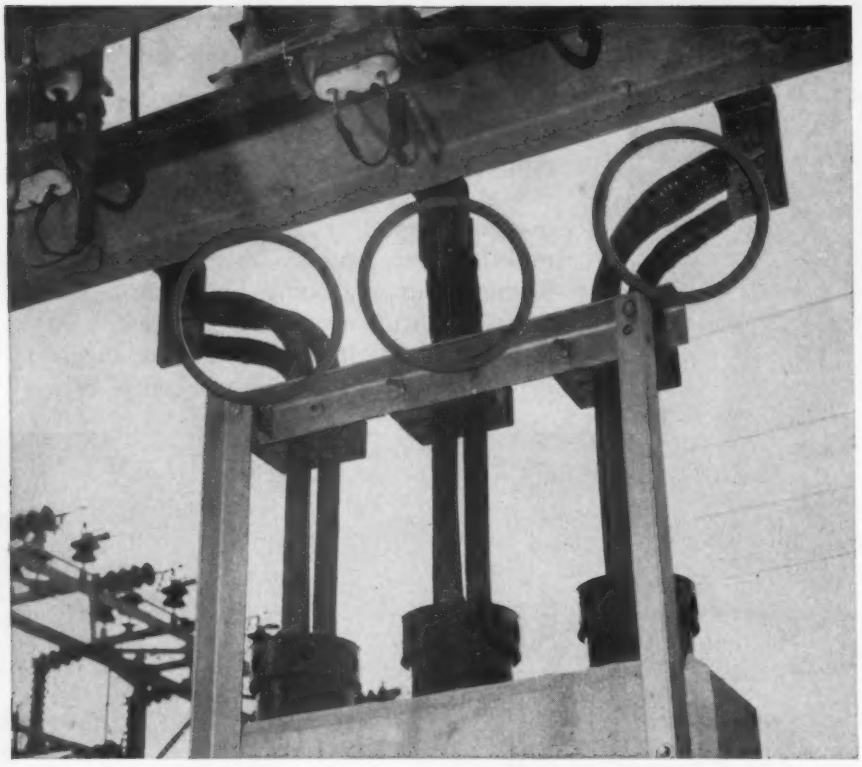
This optional design offers advantages in ease of cleaning, painting and handling, with cooling efficiency equal to conventional radiators.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

LIVE BETTER ELECTRICALLY

A-5059



Simplicity of terminating Okolite-Okoprene unshielded 5kv cable is evident in this photograph of the Pearl River Substation feeder circuits of the Rockland Light and Power Company.

Why Okolite-Okoprene UNSHIELDED 5KV CABLE simplifies installation procedure

Ease of termination is an important factor in the increasing choice of unshielded Okolite-Okoprene cable for 5kv distribution circuits. Rockland Light and Power Company specified 500 MCM Okolite-Okoprene unshielded 5kv cable for the 4160-volt feeder circuits in its Pearl River Substation. Terminal stress cones and ground straps are eliminated by the unshielded construction—only a simple, easy-to-apply wrapping of Okoprene tape is needed.

Two electrical characteristics of the Okoprene sheath eliminate the need for a shielding tape, even at 5kv. First, Okoprene's excellent ozone resistance prevents cutting by corona developed on adjacent apparatus. Second, Okoprene's high surface resistivity prevents heavy longitudinal drainage currents, which might cause the sheath to burn at the point where the electrostatic charge flows to ground.

Okonite's new 128-page Bulletin WE 1085 gives complete information on Okolite-Okoprene rubber-insulated cable in the voltage range from 0 to 5000 volts. This bulletin includes detailed cable construction features, engineering information, installation and handling techniques, instructions for splicing and terminating. Never before has all this information been compiled in one book. Write for it to The Okonite Company, Passaic, New Jersey.

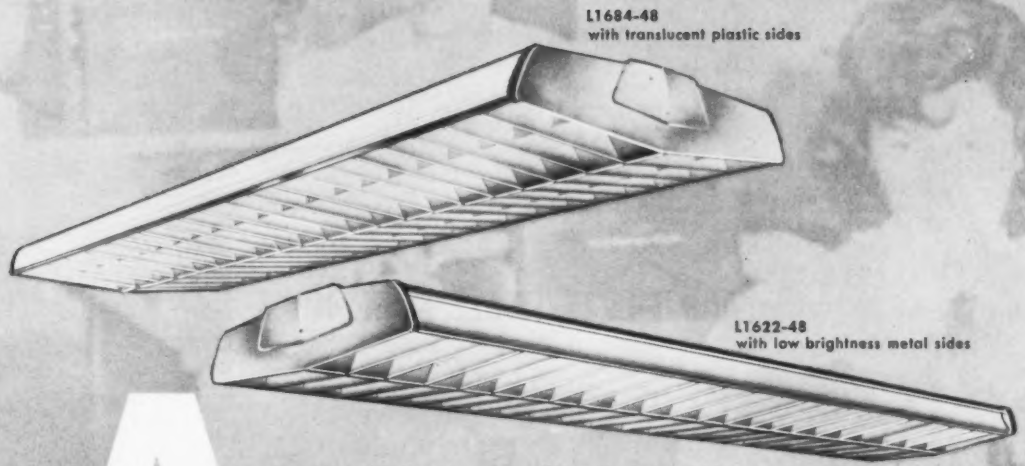
Available with either copper or aluminum conductors

OKONITE SINCE 1878 *insulated cables*

2759

SUNBEAM visionaire LIGHTING COMPANY

MAKE LEARNING EASY

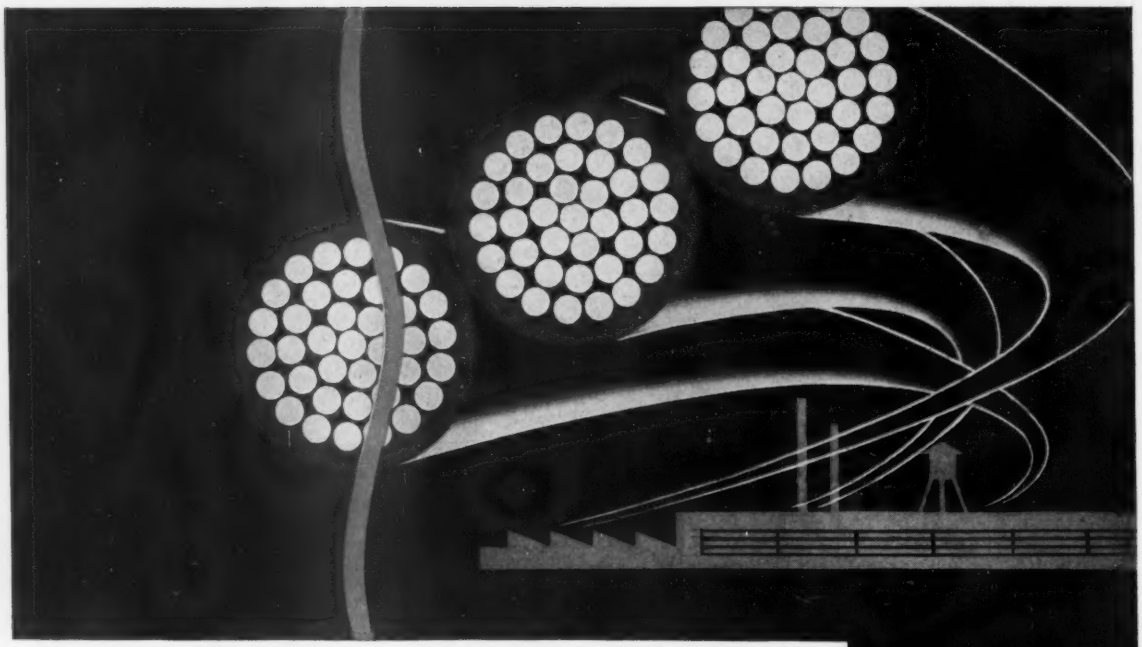


A is for Architects who will welcome Sunbeam Lighting's new L1680 series, scientifically designed to surpass the most rigid classroom lighting specifications. A is for such outstanding Advantages as unusual high efficiency and low brightness, 35° by 35° shielding, translucent plastic side panels for reduced contrast ratios and for shallow modern styling to enhance today's architectural motifs. Bonderized and finished in all white baked enamel.

B is for Board of Education members and school administrators who will be assured their decision for these Sunbeam Visionaires® will provide their student body the finest, long lasting, high quality illumination available, with maximum versatility for changing school plans.

C is for Contractors who will save money through the ease of installing the L1680-L1620 series, either ceiling or pendant mounted. Fixture channels accommodate sliding clamp hangers, ample knockouts provided for easy continuous row or single unit installation. Maintenance is simplified by chain-suspended cover and louver; lamps can be changed from a single position.

SUNBEAM LIGHTING COMPANY, 777 EAST 14th PLACE, LOS ANGELES 21, CALIFORNIA



Paranite®--AND THE INVISIBLE INGREDIENT

● Manpower is essential to production... but what is more important is the attitude of the individuals who comprise that manpower. At Paranite, you will find everyone sincerely interested in his part in the manufacture of our wire products.

This conscientious attitude is difficult to see . . . or feel . . . yet it contributes much to the high degree of perfection Paranite products have reached. This, we believe is another important phase of the *invisible ingredient.*

With an entire organization striving to produce each day a better product than the day before, Paranite has earned through the years the respect of contractors and wholesalers everywhere. In fact, these men . . . having long experienced the dependability of Paranite wire products . . . coined a phrase: "If It's Paranite, It's Right!"

So specify Paranite, knowing that the wire and cable you receive is as nearly perfect as human hands can produce . . . utilizing modern equipment and cautious testing. This is the *invisible ingredient* . . . working for you!

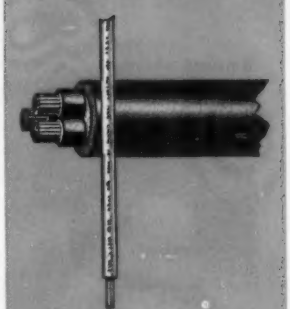
PARANITE WIRE AND CABLE

DIVISION ESSEX WIRE CORPORATION

Factory: Anaheim, California

Warehouses* and Sales Offices

***LOS ANGELES, 6415 East Fleet Street; *SAN FRANCISCO, 1077 Howard Street**
***PORTLAND, 525 North Tillamook Street; SEATTLE, 444 Dexter Horton Building**

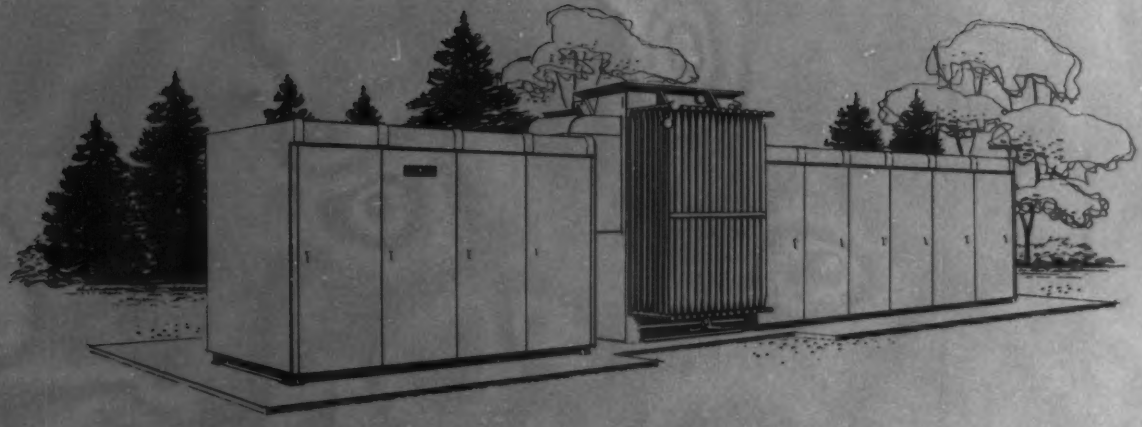


From POWER CABLE to FIXTURE WIRE . . . **you'll find Paranite quality high . . . service outstanding!**

Silver Anniversary

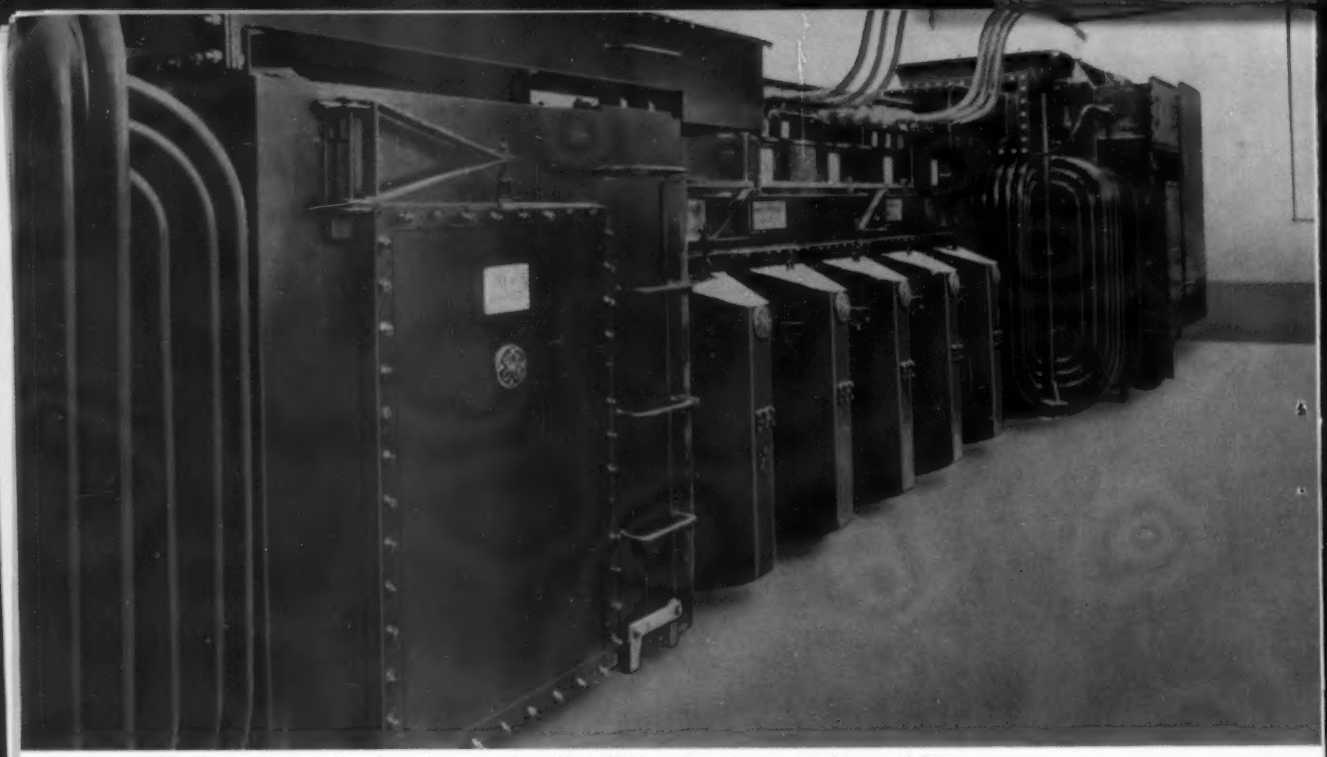
OF THE UNIT SUBSTATION

1931-1956



Progress Is Our Most Important Product

GENERAL ELECTRIC



1931 First unit substation was installed. This substation, manufactured by General Electric, is still in operation today.

1956 Modern day counterpart of first substation is this compact unit. Relatively small size makes modern substation easy-to-install close to load.

UNIT SUBSTATIONS...

twenty-five years of solving load growth problems

As the first unit substation was "put on the line" in 1931, 1956 marks the Silver Anniversary of this equipment. During the twenty-five years between 1931 and 1956, utilities have added thousands of unit substations to distribution systems all over the country.

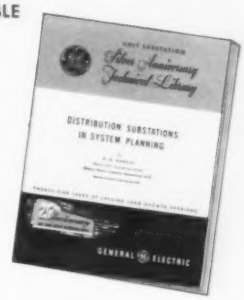
Perhaps the most important factor in the widespread usage of unit substations has been their acceptance as an easy, economical means to orderly system expansion. In addition, utilities have discovered that their small, compact size requires little installation space and makes them easy to install close to the load center.

Installation is simplified because the equipment arrives at the site in fully coordinated, factory preassembled sections. The low, clean appearance of the equipment facilitates landscaping for acceptance in residential areas.

For more information about unit substations, see your G-E Apparatus Sales Representative. General Electric Co., Schenectady 5, N. Y.

UNIT SUBSTATION SILVER ANNIVERSARY TECHNICAL LIBRARY IS AVAILABLE

To commemorate 1956 as the twenty-fifth anniversary of the unit substation, General Electric is preparing a series of technical articles which will discuss the various aspects of unit substation application in distribution systems. If you would like your name added to our Silver Anniversary Mailing List, see your G-E Apparatus sales representative, or write to section 512-12, General Electric Co., Schenectady 5, N. Y.



Progress Is Our Most Important Product

GENERAL ELECTRIC

GENERAL ELECTRIC OFFERS YOU THESE "PLUS VALUES" IN THE

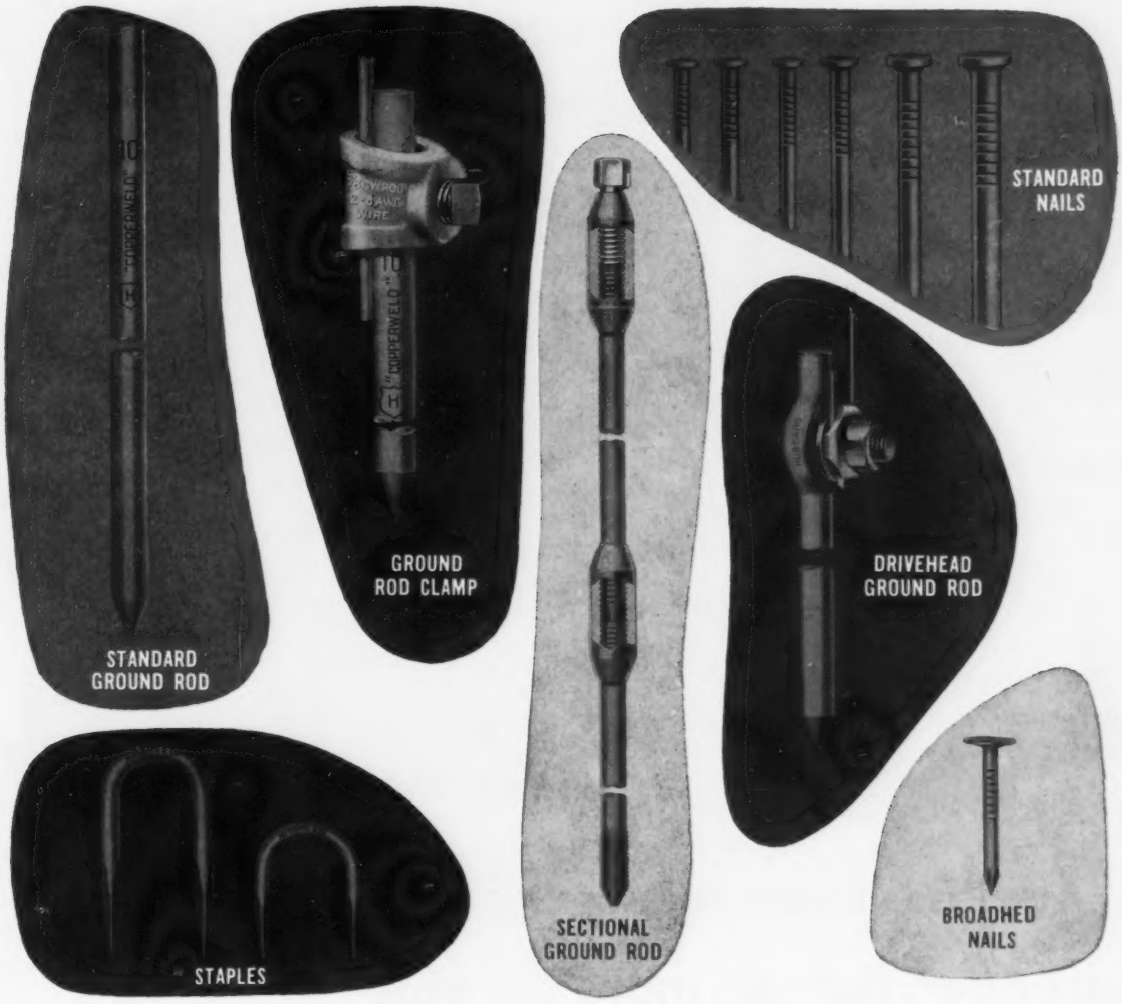
Most Modern Metal-Clad Switchgear Available Today

1. **NEW SELF-X**—flame-retardant insulation extinguishes itself in less than a minute.
2. **BETTER MOTOR PROTECTION**—new through type current transformer speeds ground-fault detection.
3. **EASIER MAINTENANCE**—Removal of light box barriers exposes main contacts and arc chutes.
4. **HIGHER RATINGS**—Metal-clad switchgear now available with interrupting ability up to 750 MVA.
5. **5-CYCLE CLEARING TIME**—minimizes damage due to faults and short circuits.
6. **EXTRA STRONG ALL-WELDED FRAME**—alignment retained despite shipping jolts.
7. **EASIER, SAFER HANDLING**—low center of gravity due to vertical lift design virtually eliminates possibility of tip-over.

For more information, ask for bulletin GER-1194, "New Design Improvements for G-E Metal-Clad Switchgear" or for product descriptive bulletin GEA-5664. Contact your G-E Apparatus Sales representative, or write to Section 511-15A, General Electric Co., Schenectady 5, New York.

Progress Is Our Most Important Product

GENERAL ELECTRIC



Permanently safe from corrosion
Hubbard Copperweld Hardware

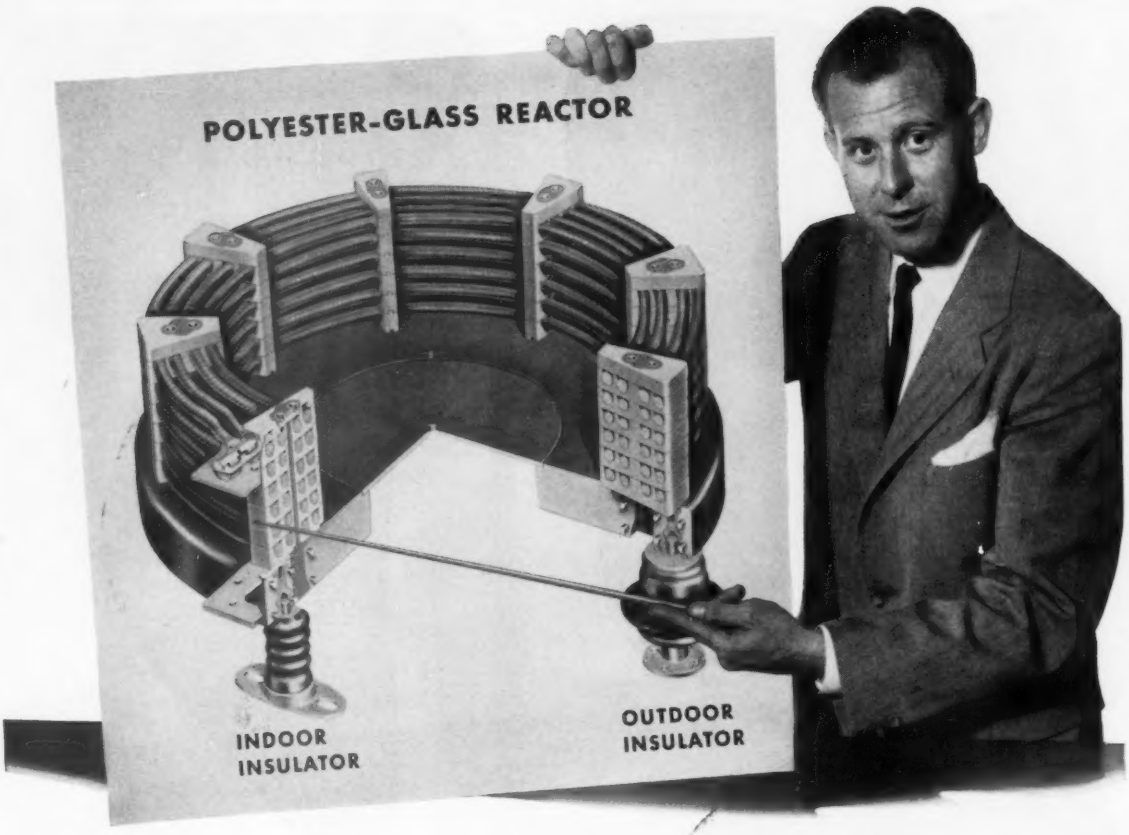
When your grounding application calls for the corrosion-proof performance of Copper combined with the strength of Steel, specify Hubbard Copperweld! Ground Rods, Sectional Ground Rods, Drive Head Ground Rods, Ground Wire Clamps, Staples and Nails are formed by the unique Copperweld molten-welding process which welds a uniform, thick sheath of Copper to an alloy Steel Core. From then on, Copperweld performs as if it were a single solid metal, installs easily, gives permanent service under the most adverse conditions of moisture and corrosion.

No matter what your specific hardware requirements call for, there is a Hubbard item especially designed for the job. Hubbard's four thousand items of pole line hardware are the most complete line in the industry. Several basic materials are available to allow you to match specific metal characteristics to individual conditions.

Call your Hubbard Distributor—he's an expert —for helpful answers on how to get the most out of your Pole Line Hardware dollar.

HUBBARD AND COMPANY

Pittsburgh 1, Pa.
Chicago 50, Ill.
Oakland 8, Calif.
Dallas (Plano), Texas



"Ageless" materials make new reactor stronger, lighter, more durable

The news in the new line of Westinghouse current-limiting reactors is a polyester glass that is stronger and lighter by far than any material used before in reactor construction. This polyester not only solves the aging and maintenance problem, but also permits a 30% reduction in reactor size and weight.

This new material provides these outstanding characteristics: (1) Exceptional mechanical and electrical strength—3 times the compressive strength and 10 times the tensile strength of concrete. (2) Great resilience to thermal and mechanical shocks—will withstand the forces generated by heavy short circuits and expansion of conductors during overloads. (3) Unequaled durability—polyester is impervious to moisture and all atmospheric conditions. Unlike concrete, it will not age or deteriorate under normal operating conditions.

The cleats are solidly bonded together by a special high-strength reinforced resin. This results in greater column strength and greater resistance to short circuit stresses between units—permits closer spacing between reactors, without the use of braces.

These new, smaller Westinghouse dry-type reactors are available in all ratings for indoor and outdoor service. For more complete information, call your nearby Westinghouse sales engineer, or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70753

YOU CAN BE SURE...IF IT'S Westinghouse

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver

Shoot FOR ECONOMY AND TOP PERFORMANCE

Andersons' PISTOL GRIP

TYPE "PG" ALUMINUM DEAD END CLAMP

*** HIGH holding power!**
Ideal for long span distribution and sub-transmission.

A new quadrant type dead end clamp that more completely meets all the requirements for proper handling of aluminum and ASCR cable on distribution and sub-transmission systems!

- LIGHT WEIGHT . . . to reduce cable damage!
- HIGH STRENGTH . . . over and above ratings of cables and insulators normally used!
- ONE-PIECE KEEPER ASSEMBLY . . . for quicker, simpler installation!
- FLARED MOUTH . . . to reduce chafing and vibration damage!
- CORROSION RESISTANCE . . . silicon bearing #356 aluminum alloy.

3 SIZES FOR COMPLETE RANGE . . . recommended for all-aluminum and ACSR cable. No liners required.

ADEQUATE WIRING SERVES AND SAVES

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Aluminum and Bronze POWER CONNECTORS • CLAMPS • FITTINGS • ACCCESSORIES for SUBSTATION • TRANSMISSION • DISTRIBUTION

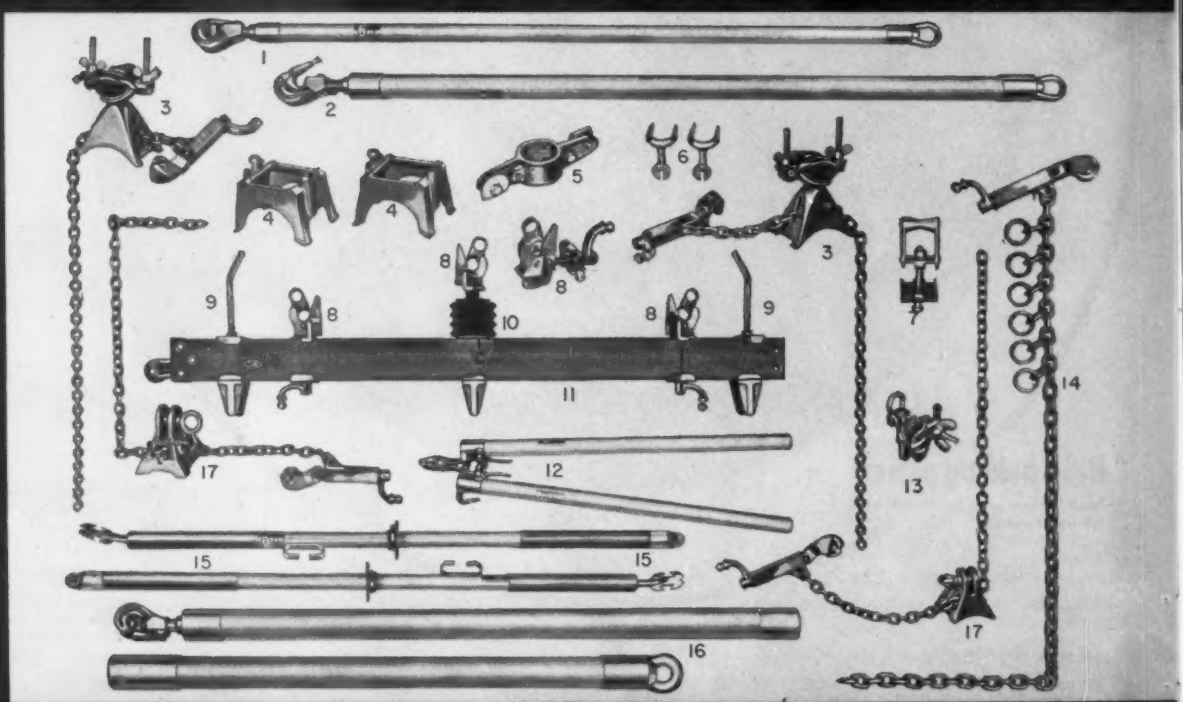
ANDERSON ELECTRIC CORPORATION

P. O. DRAWER 2151 • BIRMINGHAM 1, ALABAMA

*Formerly Anderson Brass Works, Inc.

Handle hot line jobs safely...without

KEARNEY Hi-LINE TOOLS



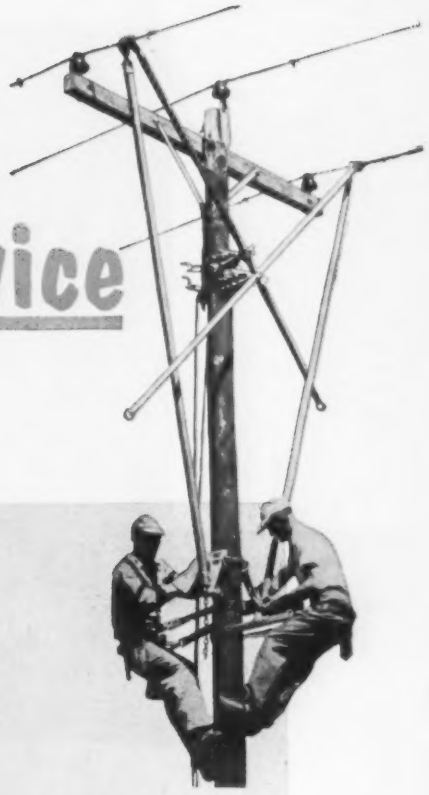
KEARNEY Hi-Line Tool Set No. 4778-3, consisting of:

1. Hand Pole 1½" x 10'
2. Lift Pole 2" x 10'
3. Pole Grip
4. Pole Grip Extensions
5. Brace Bracket
6. Tie Wire Heads
7. Side Arm Attachment
8. Conductor Holders
9. Line Guard Assembly
10. Insulator Conductor Holder
11. Side Arm only, 9'
12. Insulated Pliers 1¼" x 5'
13. Hand Pole Snub
14. Rope Hitch
15. Combination Tie Sticks 1¼" x 8'
16. Lift Pole 2½" x 16' spliced
17. Lift Pole Snubs

JAMES R. KEARNEY CORPORATION

4224-42 Clayton Avenue • St. Louis 10, Missouri

Canadian Plant: Guelph, Ontario



interrupting service

Service interruptions cause customer inconvenience . . . and revenue loss. KEARNEY Hi-Line Tools are designed specifically *for working hot lines safely,* by tool engineers thoroughly experienced in hot line work.

Each tool is manufactured of woods and metals selected to meet *specific* applications and uses. Each must pass rigid safety tests. This means operating safety for your crews.

If you have any unusual job or hot line problem on your system, KEARNEY's skilled field servicemen will demonstrate Hi-Line Tools and help train linemen in their use. Just say the word.

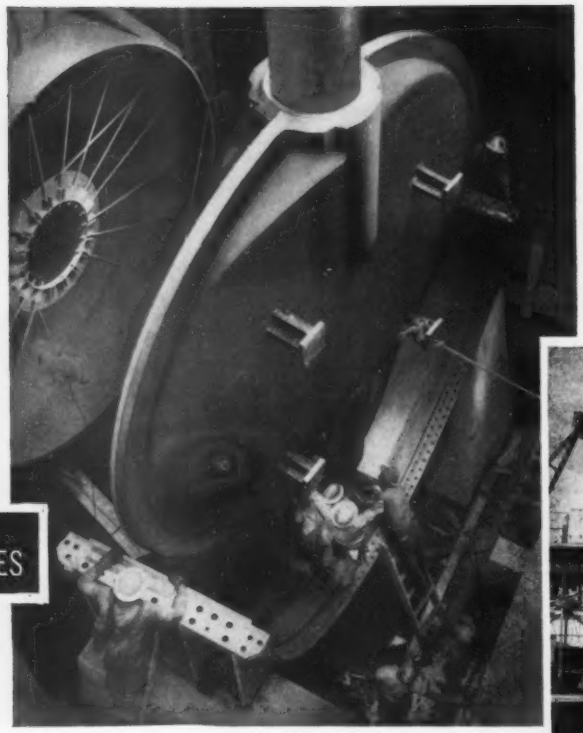
JRK-316

for BETTER CONSTRUCTION
SAFER MAINTENANCE
Specify KEARNEY PRODUCTS

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO. GUELPH, ONT.

The Mark of Quality

MAYDWELL & HARTZELL, INCORPORATED • WEST COAST DISTRIBUTORS • Los Angeles • San Francisco • Portland • Seattle • Spokane • Phoenix



An 18' butterfly valve disc is shown here during installation at Blakely Mountain in Arkansas. Note the streamlining of the welded disc.

Photos—Vicksburg District, Corps of Engineers

SMS
BUTTERFLY VALVES

SMS VALVE SEALS CUT LEAKAGE TO MINIMUM

SMS Butterfly Valve seals cut leakage to a minimum. Disc seals are adjustable from either inside or outside, whichever is specified. Specially-developed SMS trunnion seals are essentially drop-tight.

With inside adjustment, the disc may be seated directly on the plate steel housing, as at Blakely Mountain, illustrated above, and as at Fort Peck, Montana. Here a 16 ft. dia. valve, recently tested after 14 years of service, had *less than ½ gpm leakage.*

SMS welded discs and housings assure greater freedom from the material defects of castings and permit more economical construction. The photo illustrates the streamlining possible with welded steel plate construction. This holds head losses and turbulence to a minimum.

SMS has designed and built butterfly valves in diameters from 3 inches to 18 feet, for service with operating heads up to 750 feet. For the assurance that your hydraulic equipment will meet or exceed specifications, you can rely on over three-quarters of a century of experience that SMS offers. For full information on butterfly valves, hydraulic turbines and accessories, write S. Morgan Smith Company, York, Pennsylvania.

Hydraulic Turbines
Pumps
Gates & Hoists
Trash Rakes
Accessories

HYDRODYNAMICS

Rotovalves
Ball Valves
Butterfly Valves
Free-Discharge Valves
Controllable-Pitch Ship Propellers

S. MORGAN SMITH CO.

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

MD-4 HYTOOL

no.4 tap thru 2/0 splice

Now, you can install a wide range of distribution connectors on all conductors up to 2/0 . . . with just a single tool. The new MD-4, with interchangeable jaw inserts, will handle taps, splices, deadends for copper or aluminum through size 1/0 ACSR—or 2/0 for the Hysplices.

Tremendous force — 9,000 lbs. developed by combined cam and lever action—plus the simple change of die inserts—give the MD-4 a versatility never before achieved in a tool of such light weight and low cost.

Accessories include an insulating neoprene cover for the Hytool head, and a canvas carrying bag or steel case. Write Burndy for details.

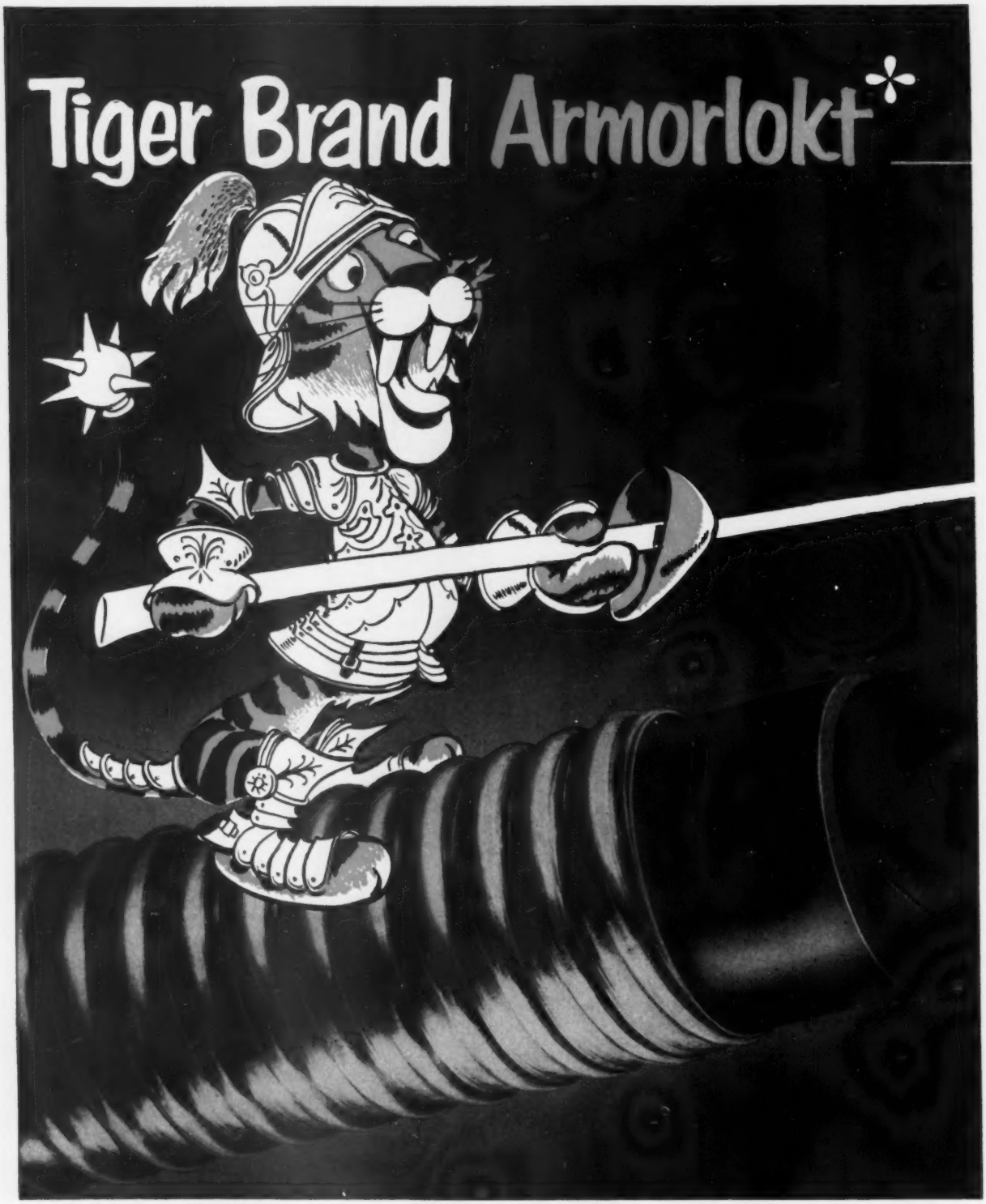
Die inserts can be changed in less than a minute.

Aligning pins position the jaws—set screws, lock them in place.

BURNDY

56-9

Norwalk, Connect. • Toronto, Canada • Other Factories: New York, Calif., Toronto • Export: Philips Export Corp.



SEE US AT THE NAED CONVENTION JUNE 10-14

* interlocked armor cable

USS

UNITED STATES STEEL

now available up to 4″ core diameter

TO meet the demand for larger sizes, Tiger Brand Armorlokt cable is now being made in sizes up to four inches core diameter. Armor can be made from either galvanized steel or aluminum.

Tremendous installation savings are available with these larger sizes of Tiger Brand Armorlokt. The assembly weighs only about 1/3 as much as standard conduit/cable methods. There is no costly conduit bending and fitting. Splices can be made *anywhere* along the cable's length—and quickly, too.

Just call your nearest American Steel & Wire representative.

A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB!

- asbestos wire and cable
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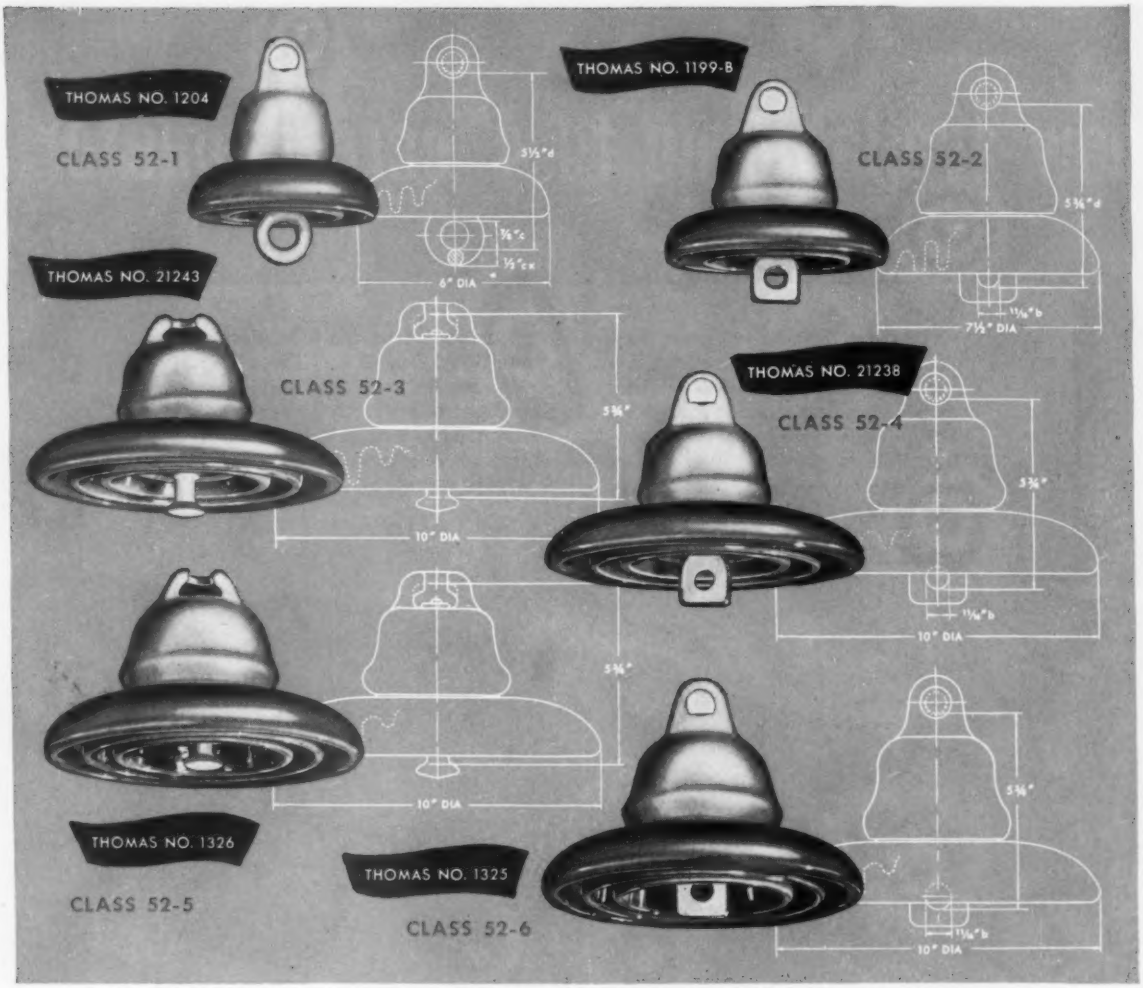
USS Tiger Brand Electrical Wire & Cable



THOMAS EEI-NEMA STANDARDS

Two of the strongest arguments for standardization are stock simplification and the advantages of interchangeability. Although we catalog many different designs, we are 100% in support of any standardization that we believe helps the industry. Therefore, we suggest users specify EEI-NEMA Standards for their suspension insulator requirements.

Thomas insulators are backed by 83 years of ceramic experience and knowledge. Quality material, precision manufacturing and PROOF OF PERFORMANCE make Thomas porcelain the standard of comparison for discriminating engineers throughout the Electrical Industry.

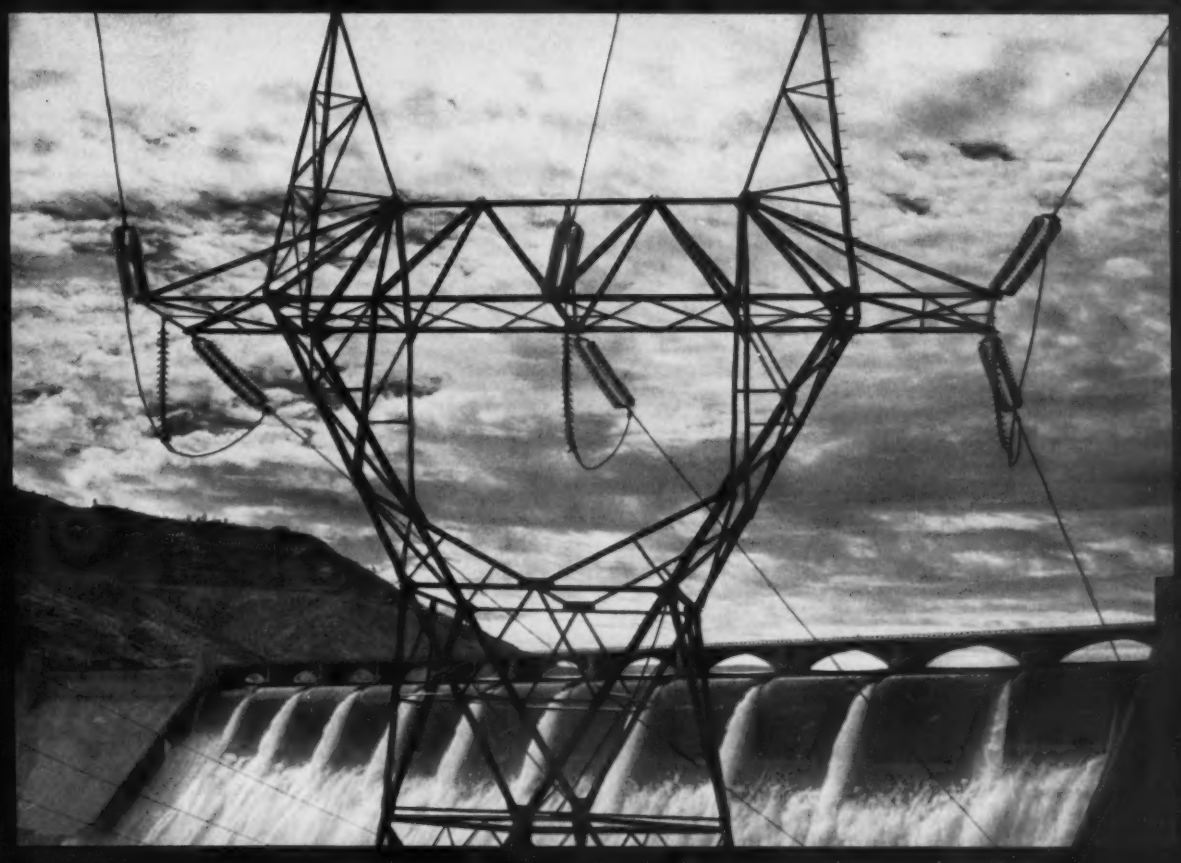
In 1907, Thomas designed and made the first cap-and-pin suspension insulator. Units installed that year are still giving trouble-proof service after 49 years of continuous operation.

Specify Thomas EEI-NEMA Suspension Insulators with full confidence that their quality and value cannot be surpassed.

The R. Thomas and Sons Co.

LISBON, OHIO

1873 THOMAS INSULATORS our 83rd year RELIABILITY 1956



Cable insulation that can't take it . . . is water over the dam!

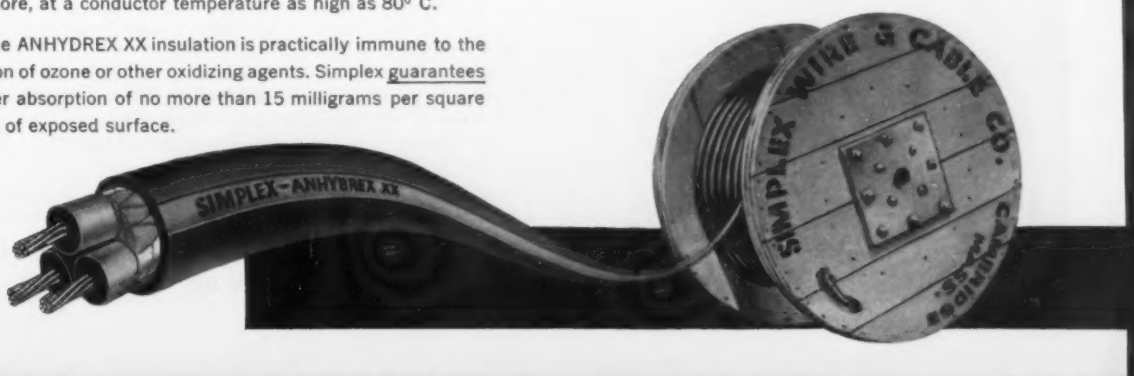
Losing power through weak cable insulation is fast becoming a thing of the past. For, more and more, today's trend is toward Simplex-ANHYDREX XX insulated cables — which withstand the toughest punishment in any location.

Simplex-ANHYDREX XX insulated cables are designed and built to operate under conditions that would destroy any other insulation. They operate at voltages of 2,000 to 25,000 or more, at a conductor temperature as high as 80° C.

The ANHYDREX XX insulation is practically immune to the action of ozone or other oxidizing agents. Simplex guarantees water absorption of no more than 15 milligrams per square inch of exposed surface.

Features like these are making Simplex-ANHYDREX XX cable first choice for all power transmission lines—no matter where the location or what the conditions.

Be sure to specify Simplex-ANHYDREX XX for your high voltage applications. For more information, write for booklet 1009. **SIMPLEX WIRE & CABLE CO.,** 79 Sidney Street, Cambridge 39, Mass.



Connect
COPPER with COPPER
ALUMINUM with ALUMINUM
use...

PAC-5
ACSR 6—1/0 Cu. 8—1/0

PAC-3
ACSR 8—2 Cu. 8—2

PAC-4
(formerly PAC 6—0)
ACSR 6—1/0 Cu. 6—2

PAC-7 (replaces PARC 6—0)
ACSR 1/0—336.4 6—1/0 A/R Cu. 8—1/0

BLACKBURN COPPER TO ALUMINUM FITTINGS

BLACKBURN PAC CLAMPS

ELIMINATE CORROSIVE SOLDERS, VOIDS AND FLUXES !

There are many satisfactory copper connectors for connecting copper conductors.

There are many satisfactory aluminum connectors for connecting aluminum conductors.

Blackburn's PAC clamps combine the features of a good copper connector and a good aluminum connector to give you the best copper to aluminum connector available.

Our exclusive method (Patent applied for) of pressure casting molten corrosion resistant aluminum alloy around specially treated pronged copper liners establishes an intimate, low resistance contact of the two metals without using corrosive solder.

The copper liners, which cannot be mated incorrectly, surround the copper conductor establishing a good copper to copper contact.

The aluminum grooves surround the aluminum conductors, establishing a good aluminum contact.

Adequate contact surface and conductor separation is built into Blackburn's PAC clamps to insure long-lasting, trouble-free copper to aluminum connections without setting up cold flow or galvanic corrosion.

Spring action is inherent in the design of PAC clamps and is supplemented with an extra-heavy spring lockwasher insuring permanently tight connections which will withstand temperature fluctuations.

Hot dipped galvanized steel hardware is standard. Aluminum hardware available on all but Catalog #PAC-3.

AVAILABLE THROUGH ELECTRICAL WHOLESALERS EVERYWHERE

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UNDERGROUND FEEDER AND BRANCH CIRCUIT CABLE

FOR WET, DAMP OR CORROSIVE LOCATIONS...
FOR DIRECT EARTH BURIAL*

APPROVED BY UNDERWRITERS' LABORATORIES

*WHEN PROVIDED WITH OVERCURRENT PROTECTION

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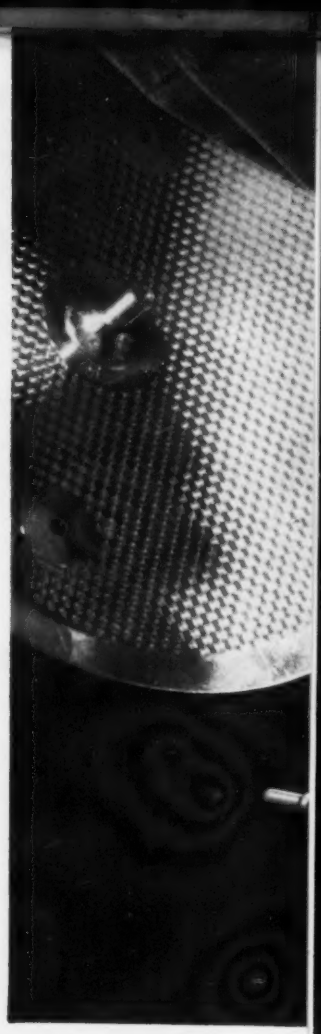
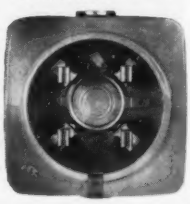
Life tests prove . . .

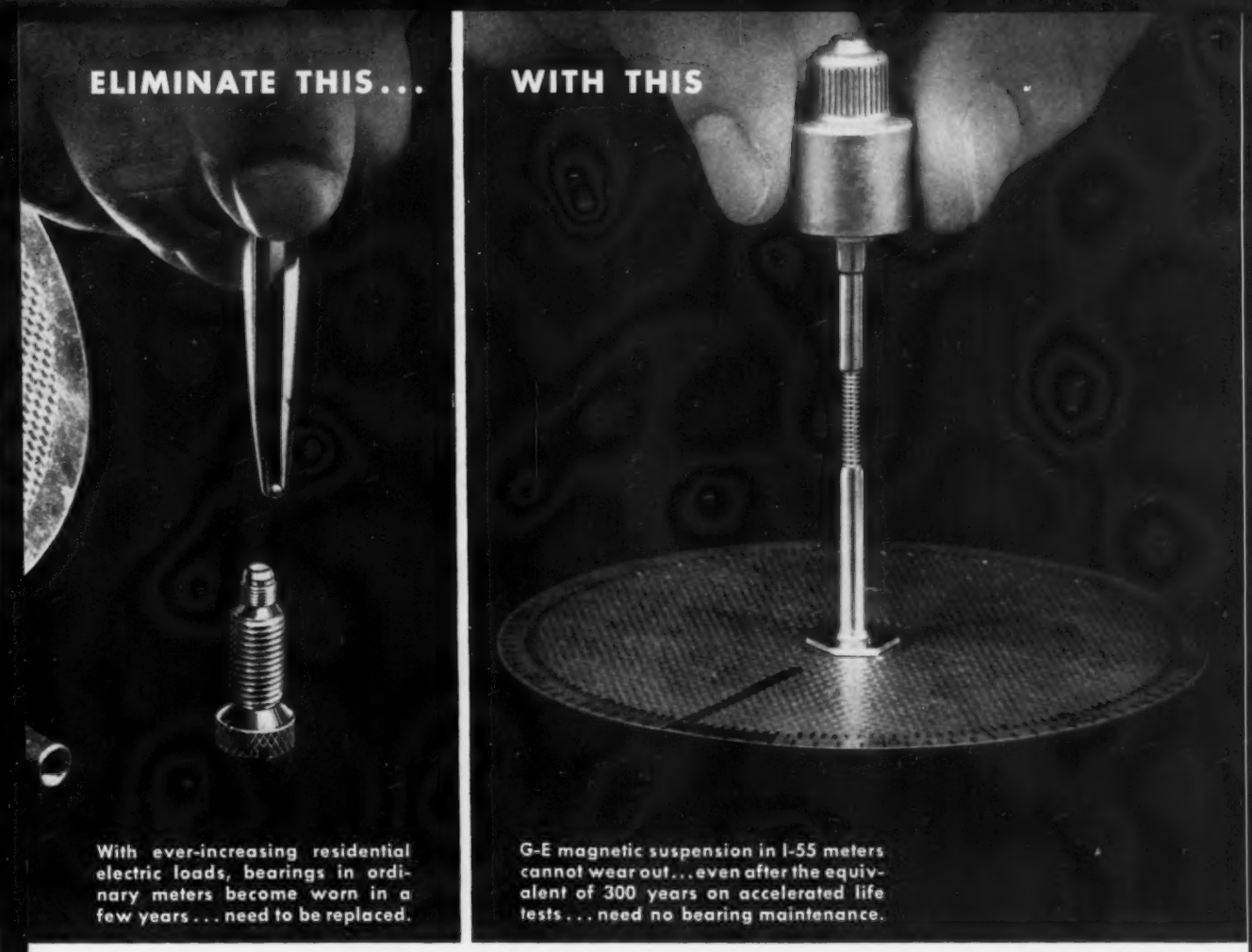
No Bearing Replacement



G.E.'s NEW "PERFECT PARTNER" . . .



the S-1 square meter socket, designed for use with extended-range meters such as the G-E I-55 on installations up to 100 amps.



With ever-increasing residential electric loads, bearings in ordinary meters become worn in a few years . . . need to be replaced.

G-E magnetic suspension in I-55 meters cannot wear out . . . even after the equivalent of 300 years on accelerated life tests . . . need no bearing maintenance.

G-E MAGNETIC SUSPENSION LOWERS METERING COSTS BY ELIMINATING BEARING REPLACEMENT

The trouble and expense of periodic bearing replacement is eliminated when you use General Electric meters with the revolutionary "floating disc." This fact was firmly established in a series of continuing accelerated life tests conducted at General Electric research laboratories. During these tests, identical loads were applied to ordinary meters using conventional ball bearings to support the weight of the moving element and to G-E meters with magnetic suspension.

HERE IS WHAT THE TESTS REVEALED:

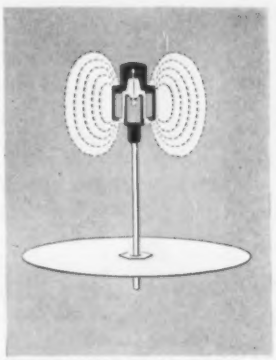
1. The ball bearings in ordinary meters must be inspected, and in many cases replaced, after a comparatively short period of time. Bearing wobble, excessive noise, and inaccurate performance necessitated removing the meters from the line and replacing their bearings.

2. The magnetic suspension system in the G-E meters—even after the equivalent of more than 300 years' operation—showed no measurable wear whatsoever.

These tests substantiate the perfect record of the more than 6 million G-E I-50 meters in service today. They offer proof that G-E meters with magnetic suspension lower your metering costs by eliminating bearing replacement, and by more accurately measuring all the power you supply.

For the meter which will pay for itself time and time again through reduced maintenance expenses alone, specify those of the General Electric I-50 family . . . the only meters with the "floating disc."

For more information contact your nearby General Electric Apparatus Sales Office, or write General Electric Company, Section 621-6, Schenectady 5, N. Y.



MAGNETIC SUSPENSION of the rotor eliminates conventional bearings, thereby greatly reducing maintenance and replacement costs.

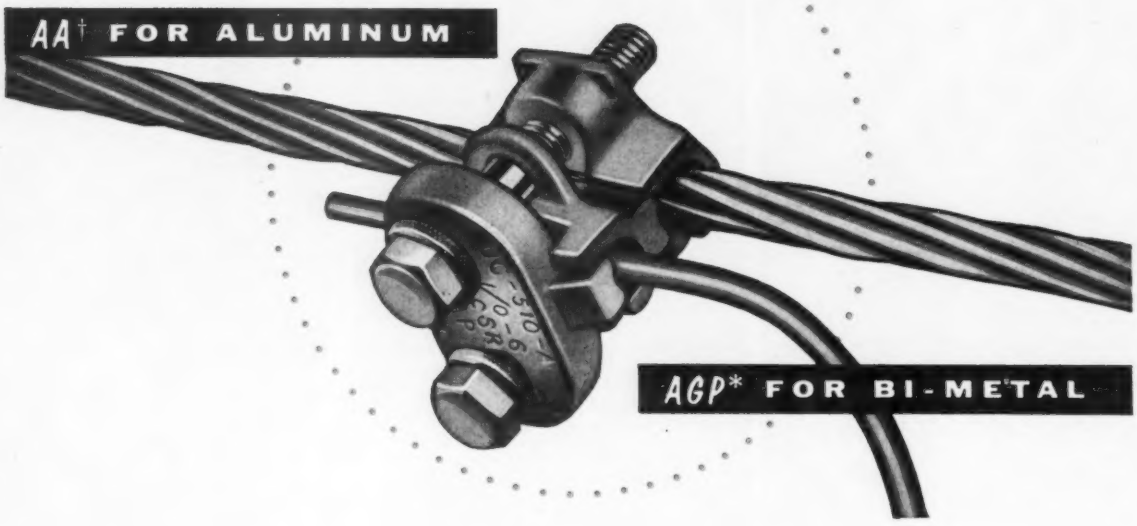
Progress Is Our Most Important Product

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

CHANCE UNICLAMPS

for easy-to-make connections



Stock only two types for all conductor combinations — al to al, al to cu, cu to cu, or cu to al

This new Chance aluminum body Uniclamp is available uncoated for all aluminum connections, or with a coating of high-density Chance FORTIFIED cadmium—just like that used on AGP Tap Clamps—for all-purpose connections. Clamp body construction speeds installation since the clamp will not come apart — there's no danger of dropping loose bolts. The tight-fitting contact surfaces will withstand hundreds of high-temperature heat cycles to protect the conductor under surge conditions.

Chance Uniclamps come in 1/0 and 4/0 ACSR sizes and are suitable for all distribution service, light transmission service and loop dead-ending. These connectors are part of the *complete* Chance line which offers a wide variety of clamps and connectors to meet every need. See your Chance Distributor, or write A. B. Chance Company, Centralia, Missouri, for full information.

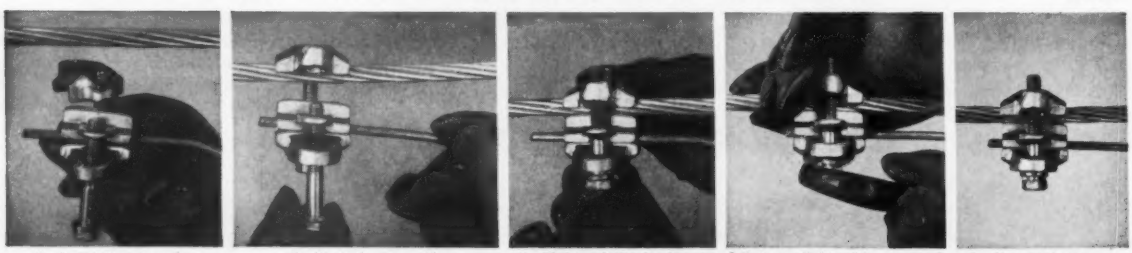
† Aluminum to Aluminum. * Aluminum General Purpose.

ABC INDUSTRIES

A·B·CHANCE CO·

IT'S EASY TO INSTALL CHANCE UNICLAMPS

CC56-10



1. Insert jumper wire
2. Seat clamp on line
3. Tighten bolts by hand
4. Pull up tight with a wrench
5. The job is done!

New Super-thin VERSA-LUX

Curtis Versa-Lux is a versatile beauty. Super-thin, Versa-Lux is in perfect cadence with new low ceiling designs, harmonizing with any decorative motif. Units available with a molded polystyrene plastic egg-crate louver, three different Holophane Controlenses—6016, 9016 and 9033-9034—or Corning Alba-Lite ribbed diffusing glass panels and plastic or glass side panels. All metal parts finished baked white "Fluracite" enamel.

This original Curtis design is as practical as it is beautiful. Just 3⅞" thin and 12" wide, Versa-Lux will replace a 12" ceiling tile, so that it can be partially recessed, mounted directly to the ceiling, or pendant hung, in continuous lines or individually.

The door is supported by three steel hinges on which it may be lowered or completely removed without the use of tools. Three turn latches securely hold the door in position. Clear plastic hinges and turn latches are used with the plastic egg-crate louver.

Architects, designers and engineers seeking a unit for performance, versatility and beauty are making this newest Curtis luminaire their unanimous choice.

For complete illustrated data on the Super-thin Versa-Lux, write Dept. F16-VL.

CURTIS LIGHTING, INC.

CURTIS LIGHTING, INC.
6135 West 65th Street
Chicago 38, Illinois

IN CANADA
Curtis Lighting of Canada, Ltd.
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GET BETTER SIGHT WITH CURTIS LIGHT—MILLIONS DO!

For emergencies and

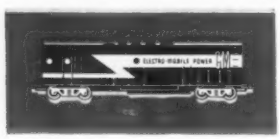
the Wisconsin Power and Light Company brings a new power source right to the point of need.

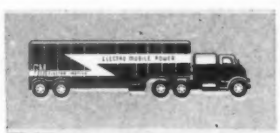
This 500-kw. Electro-Mobile highway unit helps provide uninterrupted service to its customers while line and substation work is being performed. Outages are thus minimized and work can be done more safely in less time.

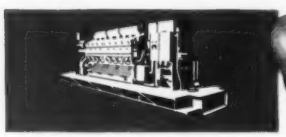
The unit also is available to handle major emergency situations which might arise—with all the speed and mobility of highway transportation.

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS • La Grange, Illinois

Rail car, truck trailer and portable units—350 to 1,000 kw.







Sold and serviced directly through a manufacturer's organization. Electro-Motive Division offices located in: New York City, Chicago, Jacksonville, St. Louis and San Francisco. In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

planned outages

WHAT THE WELL DRESSED LINEMAN WILL WEAR...

from one convenient source...

Graybar

Belts to bits . . . climbers to come alongs . . . linemen work more efficiently and in greater safety with equipment they know and respect.

For special or emergency orders, or for regularly-scheduled replacements, your nearby Graybar office or warehouse can furnish tools, supplies and equipment best suited to the job. You make your selection from the finest, most complete lines of products available — made by the nation's leading manufacturers. Graybar ships your order promptly. You save purchasing time and paper work.

Call Graybar for all of your other pole-line needs as well. You can rely on your local Graybar office or warehouse to provide complete, accurate information on everything electrical for pole-line construction and maintenance. For special help on tough or unusual problems, feel free to ask for the assistance of a Graybar Outside Construction Specialist.

634-86

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420 Lexington Avenue, New York 17, N. Y.

Call Graybar first for...

Everything Electrical
GraybaR ELECTRIC COMPANY
Since 1869
* REG. U.S. PAT. OFF.

IN OVER 130 PRINCIPAL CITIES

What Was Behind the Stevens County Election?

"I favor private enterprise."

"A private utility pays more taxes. Political power escapes taxes."

"The PUD criticized private utilities for slow development but PUDs are slower."

"I never did like political power's statements and promises."

"Private utilities give lower rates in spite of heavier tax burdens."

"Private utilities give better service to me and to the community."

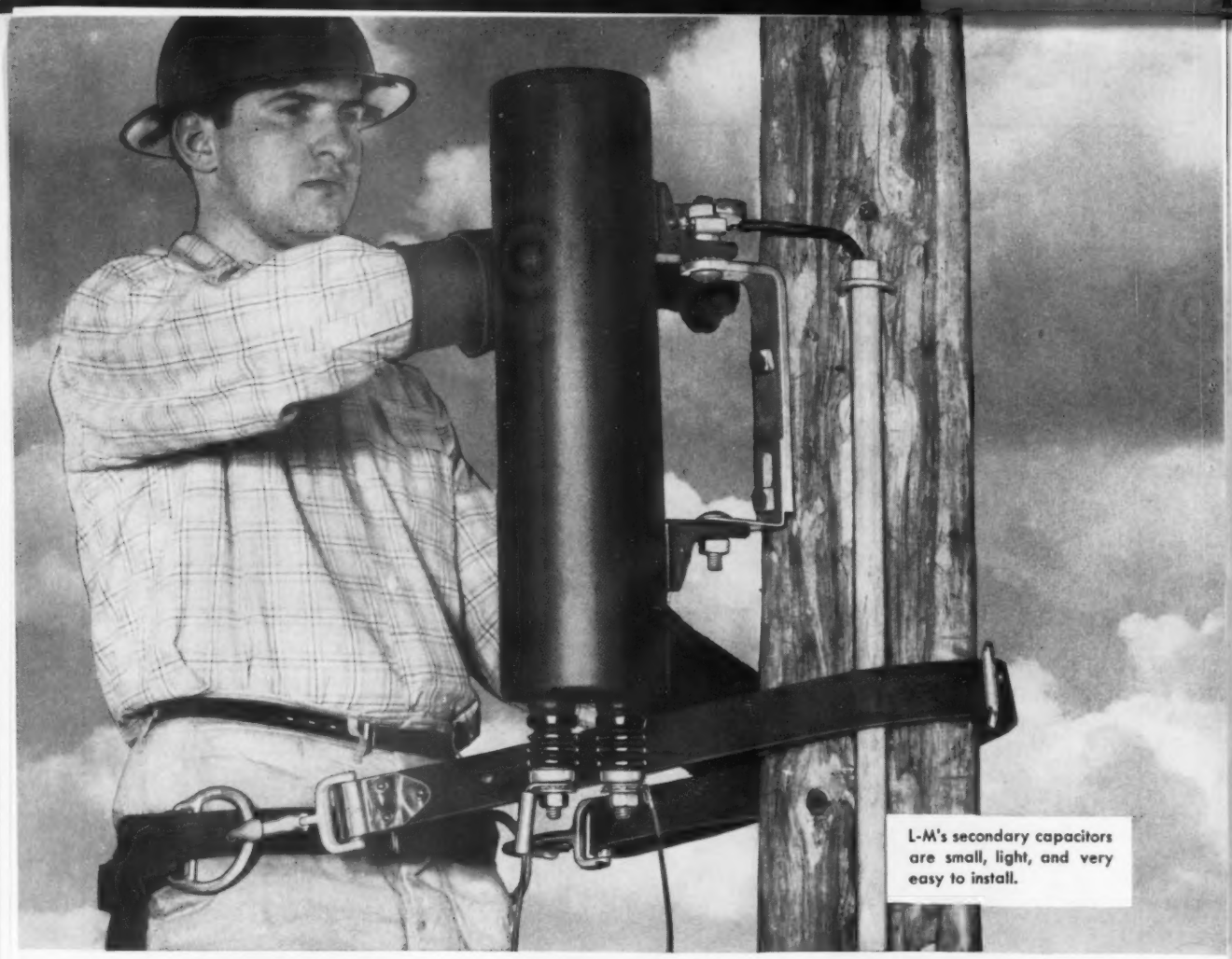
For these and other reasons the people of Stevens County voted five to two to sell the PUD and take electric service from a private utility.

Vote-wise, people of the Northwest prefer private utilities instead of political power.

Despite fifty years of constant effort of the public power advocates, 1,148,964 electric customers in Washington, Oregon, Idaho and Montana are served by private companies. Compared to this, 116,360 are served by Co-ops; 232,134 served by PUDs and 352,595 served by Municipals.

The Pacific Northwest does NOT PREFER political power.

NORTHWEST ELECTRIC LIGHT AND POWER ASSOCIATION



L-M's secondary capacitors are small, light, and very easy to install.

L-M Secondary Capacitors Improve Overloaded Distribution System

L-M offers complete line of secondary capacitors as an economical means to increase load capacity, reduce load losses, and improve voltage level of secondary system.

By **N. K. DELANEY**
Product Manager
Capacitors and Regulators
Line Material Company

The effectiveness and economic worth of secondary capacitors have increased considerably because of the heavy load growth from motored appliances. Many residential secondary systems have been forced to operate with loads having as low as 70-percent power factor.

Advantages of Secondary Capacitors

By improving the power factor in the secondary circuit, secondary capacitors can provide the same benefits as obtained by installing larger distribution transformers, heavier secondary conductors, or voltage regulators, and can do this at appreciably less handling and installation costs. This comparison, of course, must be within the range obtainable by power factor correction.

Transformer Capacity Increased

The maximum benefit from secondary capacitors is obtained at the most advantageous period, which is during peak-load conditions. The chart, Fig. 1, shows the decrease in transformer loading obtained by adding capacitors to the transformer secondary, and Fig. 2 shows the recommended number of capacitor units with various transformer ratings.

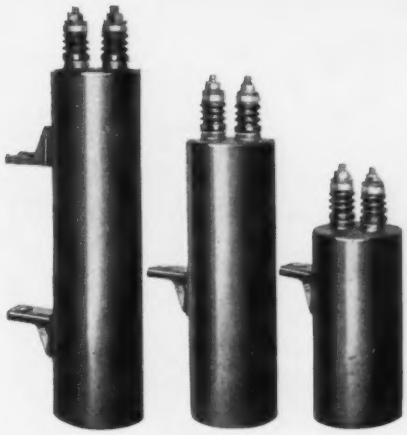
Load-Loss Reduction

The combination of transformer and secondary capacitor is more efficient than a transformer large enough to carry the load. The secondary capacitor, by increasing the power factor of the load, reduces the amount of current that has to flow through the transformer and secondary conductors.

Voltage Improvement

The value of voltage improvement with secondary capacitors is equal to the same amount of fixed primary kvar, *plus* the voltage rise through the distribution transformer and affected secondary.

LM®
LINE MATERIAL
A McGRAW ELECTRIC COMPANY DIVISION



L-M secondary capacitors are available in 7½, 5, and 3 kvar. See chart for height and weight.

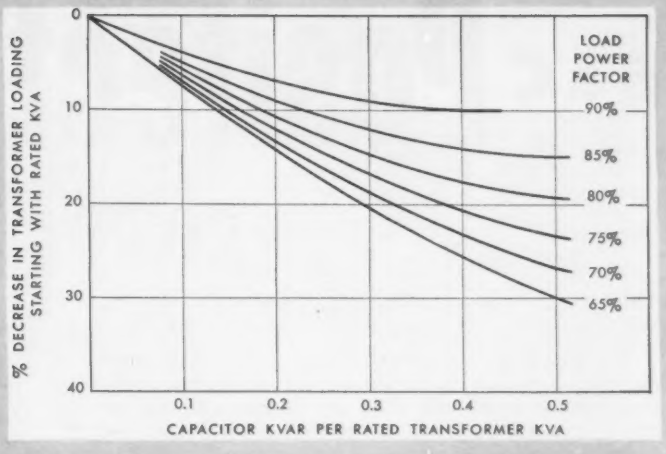
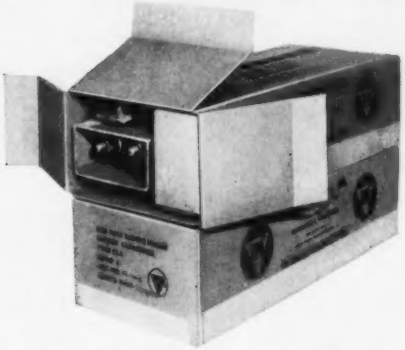


FIG. 1—These curves show how you can decrease transformer loading—at various power factors—by adding secondary capacitors.



L-M's unique carton permits easy testing of capacitors without removing them from the carton.

Distribution Transformer Rating in KVA	Recommended Number of Capacitor Units			
	3 KVAR	5 KVAR	7½ KVAR	10 KVAR
10	1	—	—	—
15	2	1	—	—
25	3	2	1	1
37½	4	3	2	1
50	6	4	2	2
75	9	5	3	3

FIG. 2—The above chart shows the recommended number of secondary capacitor units with various transformer ratings.

Capacitor Location

To obtain the maximum benefit, capacitors should be installed in pairs, located from ⅓ to ¼ the distance to the end of the secondary, in each direction. This recommendation is based on a reasonably uniform load distribution and secondary conductors in two directions from the transformer.

L-M Offers Complete Line Of Capacitor Equipments

L-M's secondary pole-mounted capacitors are available in 3, 5, and 7½ kvar. 10 kvar unit will be available soon.

L-M's 216-volt, 13⅓ kvar submersible capacitors are available in 40, 80, and 120 kvar racks, completely assembled at the factory ready for field installation.

L-M's complete line of primary capacitor equipments includes pole-mounted, single and multi-row racks, factory-assembled blocks and metal-enclosed equipments. Most capacitor equipments are available in 2400- to 13,800-volt; 25 or 50 kvar capacitor units.

Some Outstanding Features Of L-M's Pole-Mounted Secondary Capacitors

Leads of 48-inch, 600-volt, wire furnished as standard equipment.

Bushing-Mounted Fuse with 48-inch lead can be supplied.

Solder-Sealed Bushings of strong one-piece wet-process porcelain provide a positive, lasting seal.

Pole-Mounting Bracket has two 9/16" holes for ½" lag screws. Standard EEI-NEMA crossarm-mounting bracket furnished if required. Capacitor can be mounted with bushings up or down.

Aluminum Metallizing process protects steel tank from oxidation; is followed by a chromate primer and a finish coat of alkyd resin paint.

Round-Pack, Round-Tank Design makes these capacitors small, light, easy to install. Unit has a one-minute discharge resistor; is completely impregnated under vacuum with low temperature Elemex liquid dielectric.

Weight and height of L-M's 240-volt, pole-mounted secondary capacitors.

Size Kvar	Height Inches	Net Weight* Pounds
3	13¾	18
5	18⅝	25
7½	23½	33
10	Available Soon	

**Weights include the pole-mounted brackets.*

Get The Whole Story On L-M's Capacitor Equipments

Ask the L-M Field Engineer for complete information and bulletins on the construction and application of L-M's full line of primary and secondary capacitor equipments. Also on L-M's capacitor bank engineering service. Or write Line Material Company, Milwaukee 1, Wisconsin.

257-R

Elemex® Capacitors

S&C Positect

gives

1 HIGHEST INTERRUPTING CAPACITY
2 FULL LOAD SWITCHING
3 SAFETY

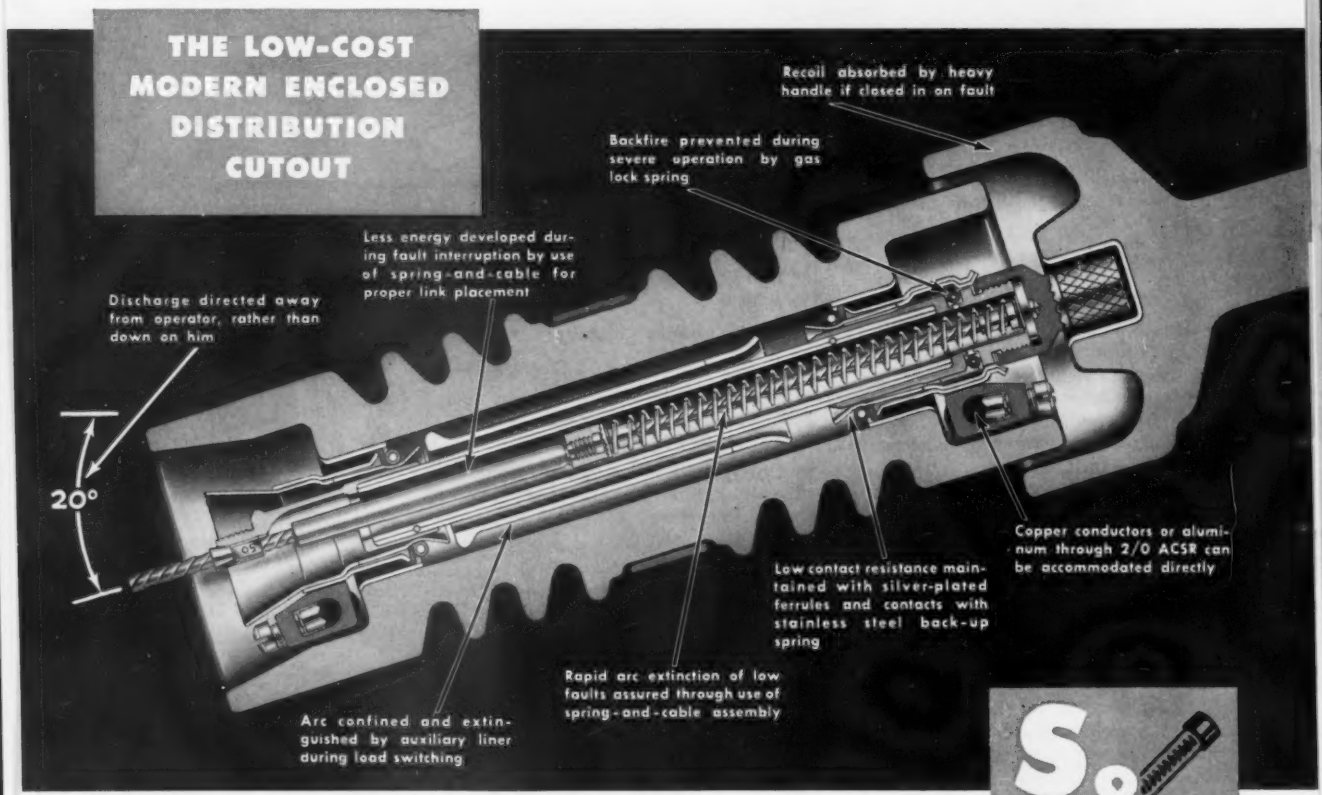
These are the reasons so many large utilities—after exhaustive testing—have "standardized" on the Positect.

The high interrupting capacities—10,000 and 12,000 amperes asymmetrical for the 50 and 100 ampere sizes, respectively—are backed up by 14,000 and 16,000 ampere one-shot ratings, matching the high faults on today's distribution feeders.

Full load switching—200 amperes of load current, and associated magnetizing and charging current—is positive and without external arcing. And—best of all—there's built-in safety for the operator. Hook stick operation is unnecessary.

For details on the many advantages of "standardizing" on the Positect, write for Catalog Sec. 520 . . . we will gladly send one.

Load switching is accomplished by removal and insertion of bayonet.


THE LOW-COST MODERN ENCLOSED DISTRIBUTION CUTOUT
Recoil absorbed by heavy handle if closed in on fault
Backfire prevented during severe operation by gas lock spring
Less energy developed during fault interruption by use of spring-and-cable for proper link placement
Discharge directed away from operator, rather than down on him
20°
Copper conductors or aluminum through 2/0 ACSR can be accommodated directly
Low contact resistance maintained with silver-plated ferrules and contacts with stainless steel back-up spring
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Specialists in High-Voltage Circuit Interruption since 1910

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Lighting by DECIDEDLY BETTER DAY-BRITE Lighting Fixtures makes the big difference . . .

Mr. Emmet G. Molz, Hickson Electric Corp., Rochester, N. Y.

"Our customers are happy"

"One of the things we like most about Day-Brite is the fact that our customers are really proud of their lighting when the job is finished. Naturally, that builds our reputation and helps us get more good jobs.

"Our foremen are impressed with the way they can put in Day-Brite fixtures. They go up fast, without any messing around—are easy to line up in long, straight runs.

"All in all, we're for Day-Brite—have been for a long time."

By making these comments, Mr. Molz adds his name to thousands of electrical contractors, from Coast to Coast, who favor Day-Brite's many superior features.

NATION'S LARGEST MANUFACTURER OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT

Certified Lighting

"DECIDEDLY BETTER" DAY-BRITE Lighting Fixtures

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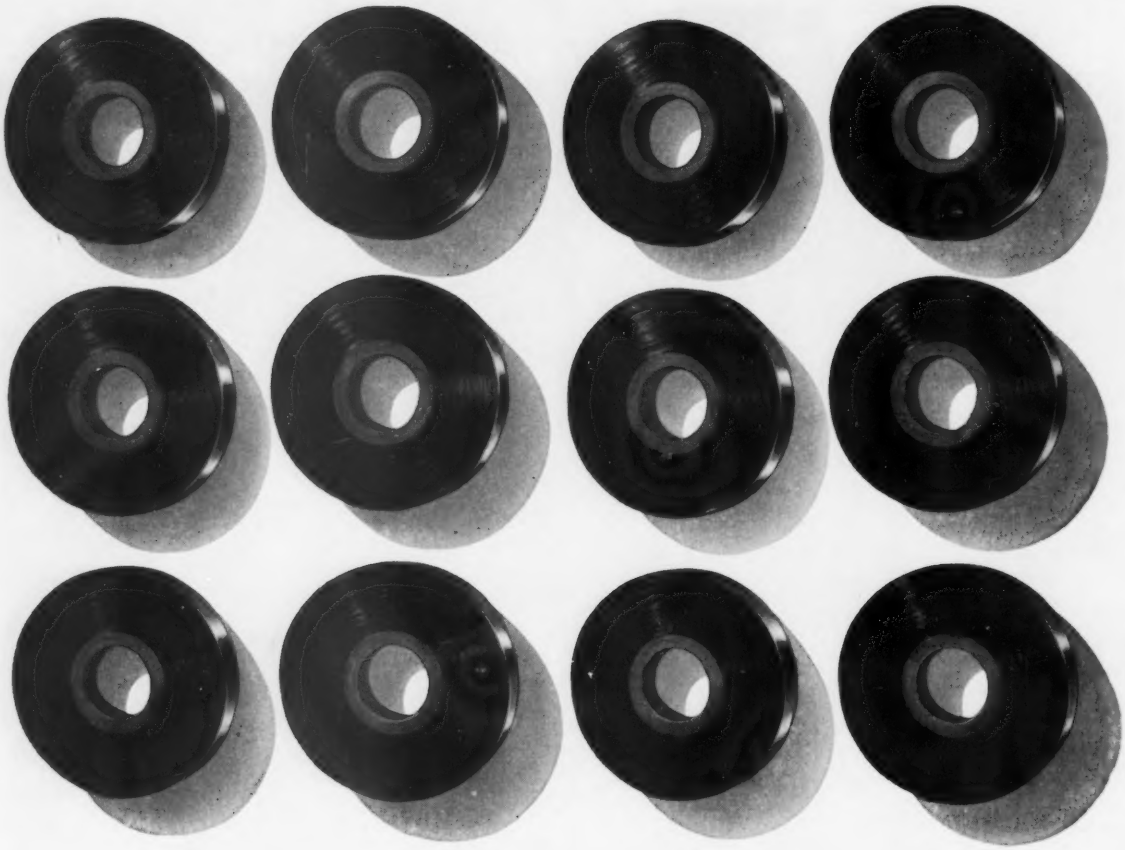
Day-Brite Lighting, Inc.
5412 Bulwer Ave., St. Louis 7, Missouri



Can you spot a bad roll?

You'd need a pretty sharp eye. Slight variations in tape caliper or in dielectric strength are, like hundreds of other tape properties, pretty hard to see, or to feel.

Yet these tape properties are important — *vitally* important to safe, well insulated wiring — on bus bars, conduit, fittings.

On "Scotch" 33, we turn the job over to scientists — to machines and super-sensitive instruments. They perform hundreds of rigid quality-control tests. They make certain that the first plastic electrical tape on the market (and its heavy-duty cousins: "Scotch" 21, 22) is still the finest. And they make certain the quality *holds.*

That's why more public utility engineers specify "Scotch" 33 than any other plastic tape. They know their men like it — like the way it handles, the way it performs. They know, too, it's the safest way to get exactly* what they want — every time!

**Specifications for "Scotch" Brand No. 33 Plastic Electrical Tape: caliper — .007 inch; dielectric strength — 9,500 volts; adhesion (ounces per inch width) — 25; elongation at break — 175%; tensile strength (lbs. per inch width) — 25; More detailed information on request.*

PRODUCT OF 3M RESEARCH

REG. U. S. PAT. OFF.

SCOTCH BRAND No. 33 Electrical Tape

The term "Scotch" is a registered trademark of Minnesota Mining & Manufacturing Company, St. Paul 6, Minn. Export Sales Office: 99 Park Avenue, New York 16, N.Y. In Canada: P.O. Box 757, London, Ontario.

3M COMPANY

LOWER COSTS per installed kvar

with Sangamo's NEW 50 kvar Diaclor Capacitor

Better weight distribution in less space enables more Kvar per pole. You get lower installed costs per Kvar for capacitor banks through more economical use of poles, racks, installation materials and time. Savings in switching and protective equipment are also realized.

The coupon below will bring you Bulletin 1121 with complete specifications on Sangamo's 25 and 50 Kvar Capacitors.

New, multi-petticoat solder-sealed bushings make a strong and permanent hermetic seal. Pressure compensating stainless steel lock washers and tin-plated terminal parts facilitate quick and permanent connections with either copper or aluminum conductors.

SANGAMO
ELECTRIC CO.
SPRINGFIELD, ILLINOIS

Please send your new Bulletin 1121 ☐. Also send Bulletin 1120, with the full Sangamo Power Capacitor story ☐.

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PC56-3

Easiest Installation

. . . Why you get it with Rome·RIGID

The fishing's easy when you're pulling cable through Rome • RIGID conduit.

We go to great lengths in order to give you conduit that combines utmost protection with high-speed installation. The following useful information tells you why this is so.

Inside story. Burrs, flashing, rust, and similar imperfections inside the conduit you use can raise havoc with your wire or cable.

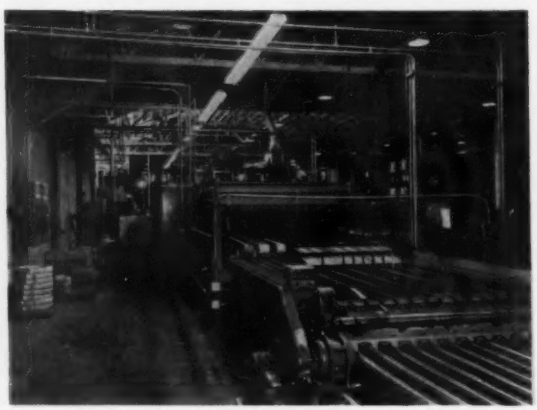
To avoid imperfections like these from the very start, we make Rome • RIGID of hot-rolled sheet steel, shot-blasted on both sides. Unlike the "skelp" used in ordinary conduit, this steel shows no heavy mill scale or pitting.

Cold formed for strength and uniformity. We cold form Rome • RIGID to avoid the oxidation and scale which often develops on hot formed pipe. Result: You get conduit with faultless finish, conduit of uniform wall thickness and strength. Rome • RIGID is the only cold formed conduit.

Electric welding. We alone use electric resistance welding for conduit, the same method used to weld tubing for high-pressure boilers.

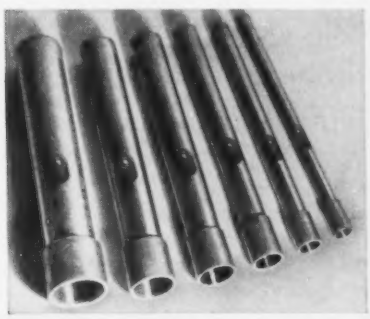
Clean, corrosion-resistant surface. Most important of all is the superior resistance to corrosion you get with Rome • RIGID. It's the only rigid steel conduit hot-dip galvanized by Armco's patented Sendzimir process, a method with painstaking control of temperature and atmosphere, that results in a uniformly fine surface and easy bending.

Rome • RIGID is the cleanest conduit you can buy. It's easier to install, easier to fish, easier to maintain when your wiring is completed. Prove these facts to yourself on your very next conduit installation.

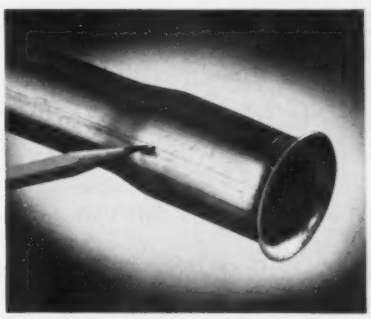


Corrugated paper goes in . . . completed cartons come out of this automatic machine. More so than with most machinery, every part of an installation like this must function perfectly—including the conduit that protects its wiring. All conduit used here is Rome • RIGID.

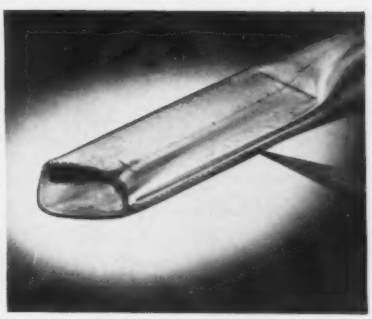
One of three panels guiding power to a carton-making machine installed at the South Gate, California plant of Fibreboard Products, Inc. The Rome • RIGID conduit used gives complete protection against mechanical and chemical injury to the machine's wiring.



Rome • RIGID is available in 10-foot straight lengths and 90° elbows. Sizes: ½" to 6". Fully approved by Underwriters' Laboratories, Inc., Rome • RIGID meets all industry requirements for safe steel raceway.



Thousands of pounds of pressure were used to expand and flare this piece of Rome • RIGID more than 25%. Notice the weld remains as sturdy as ever.



Smashing blows like those of a drop hammer flattened this piece of Rome • RIGID. They could not rupture the electrical weld.

It costs less to buy the best

ROME CABLE Corporation
ROME • NEW YORK
and
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WESTERN SALES OFFICES AND WAREHOUSES

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3430 Fourth Ave., So.

DENVER 3, COLO.
1160 Elati St.

PORTLAND 5, ORE.
1020 S.W. Taylor St.

ARE YOU KEEPING PACE WITH CHANGING TIMES?

Ours has never been a business of "yesterdays." Since its very beginning the electrical industry has always looked forward to its "tomorrows."

Today, as always, change is in the air. Technological advances are altering the very nature of the industry. New developments in the generation, transmission and distribution of electrical power affect every aspect of the business. Changes in the manufacturing and merchandising of electrical equipment, supplies, and appliances produce different problems and different methods.

Our industry moves rapidly and drastically. It presents a direct challenge to you—the challenge of keeping abreast of the current or falling behind. The best way for you to keep pace is to join the P.C.E.A. With a membership of 300 companies and approximately 4000 individuals it provides you with an unparalleled source of information and ideas.

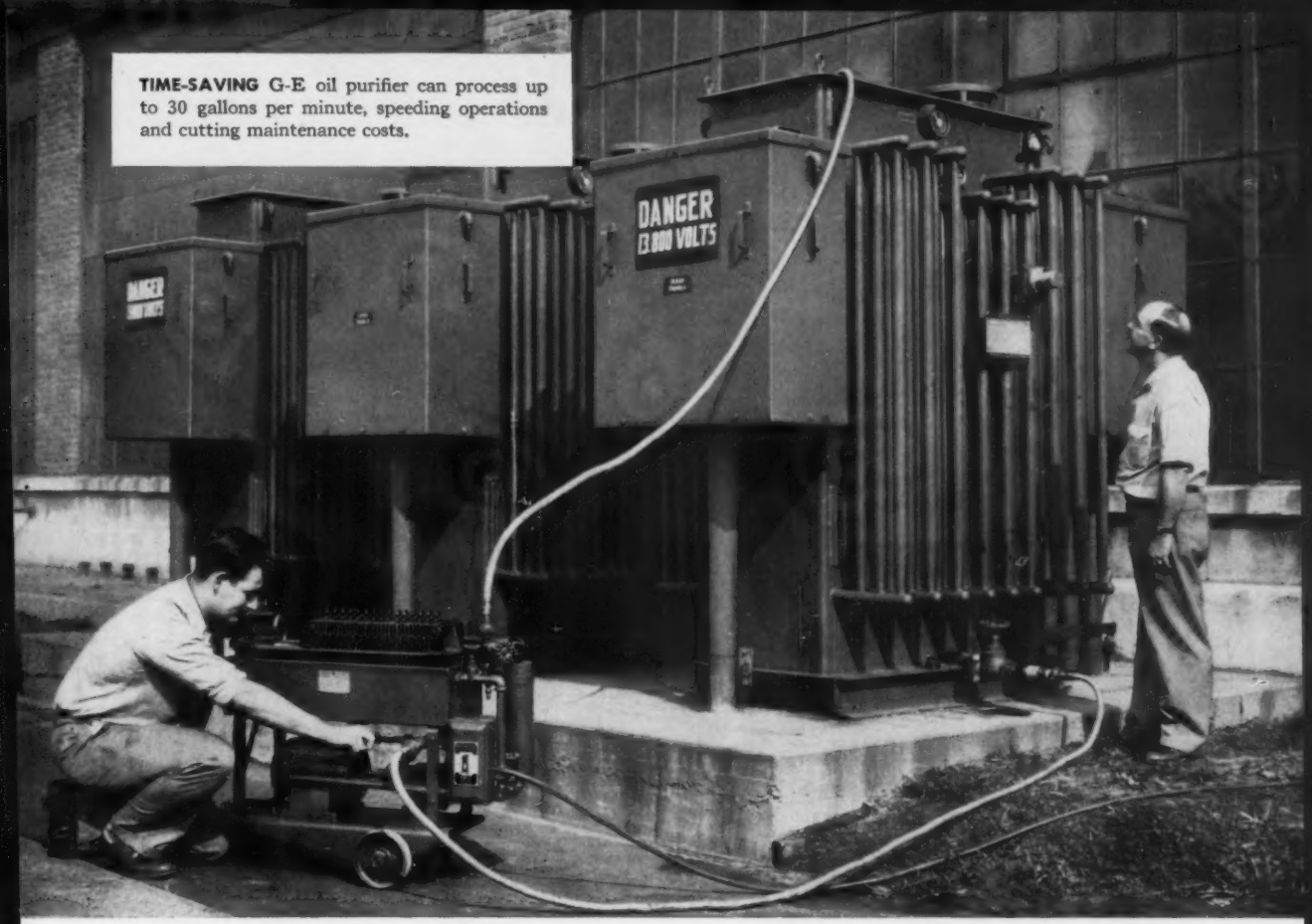
If you are not a member, join now.

PACIFIC COAST ELECTRICAL ASSOCIATION, INC.

530 WEST SIXTH STREET
LOS ANGELES 14

681 MARKET STREET
SAN FRANCISCO 5

Associations Do Those Things Which Most People Think Just Happen



TIME-SAVING G-E oil purifier can process up to 30 gallons per minute, speeding operations and cutting maintenance costs.

Cut maintenance costs with G-E Purifiers

Recondition insulating liquids quickly and easily with this low-cost device

You may be able to cut your maintenance costs in filtering insulating liquids for transformers, regulators, and other electrical equipment by using General Electric purifiers for oil and Pyranol*. The purifiers, which filter out suspended sediment and free and dissolved water, have high capacity, do high-quality work, and are easy to use.

It is important, of course, to filter the insulating liquid when filling a tank for the first time, or when refilling an old tank. Maintenance of dielectric strength is more important today than ever before because many users are ordering transformers with reduced basic insulation levels. If periodic testing indicates a need for filtering, the G-E purifier will do the job, safeguarding equipment life and helping to assure continuous service to customers.

High Capacity—The new G-E oil purifier with 7-inch filter-paper plates has a capacity of 12 gallons of liquid per minute, a 20 per cent increase over other available models. This means rapid filtration, short shutdowns, and low maintenance costs. The model for purifying Pyranol has similar output. Models, using 12-inch filter-paper plates, filter 30 gallons per minute.

High-quality Work—Using adequately dried filter paper, you can normally raise the dielectric strength of oil to be reconditioned to 30 kv with just one pass through the purifier.

Easy to Use—Simplicity of operation saves time in training maintenance crews. Unskilled workmen can easily set up and operate G-E purifiers. The single-phase pump motors operate on 115/230 volts, and the filter-paper drying ovens used in conjunction with the equipment are rated for either 115/230 volts or 230/460 volts. Purifiers and ovens can be quickly connected either to single-phase lighting circuits or to one phase of a three-phase circuit.

For More Details—For complete information on low-cost G-E purifiers for oil and Pyranol, drying ovens, and filter paper, contact your nearest G-E Apparatus Sales Office, or write for Bulletin GEA-1333, Section 431-45, General Electric Company, Schenectady, New York.

*Registered trade mark of General Electric Company.

Progress Is Our Most Important Product

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

Super power transformers pace utility expansion

"Big Power" Transformer goes to Long Island

THIS 125,000-kva Allis-Chalmers power transformer is in operation at the Far Rockaway generating station of the Long Island Lighting Company. It is a typical example of the power transformers being built by Allis-Chalmers for utilities all over the country.

As power needs grow, utilities are adding more and more of these big transformers to their systems. Allis-Chalmers has helped in the development of new transformer engineering and construction techniques to aid utilities in solving their expansion problems.

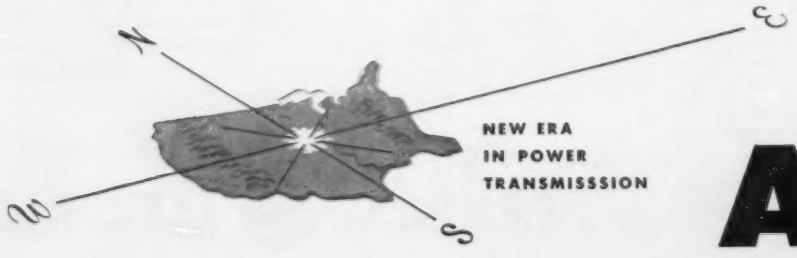
Here are some of the features worth noting:

Quiet. This transformer was built to operate at 76 decibels. Normal sound level for a transformer of this type would be at least 85 db. Continuous noise research includes a 10-acre outdoor proving ground, mobile testing equipment, and extensive laboratory facilities for testing and analysis.

Cool. This transformer is cooled by *Electro-Coolers*, consisting of air-to-oil radiator-type heat exchanger and pump, which provide high efficiency heat transfer.

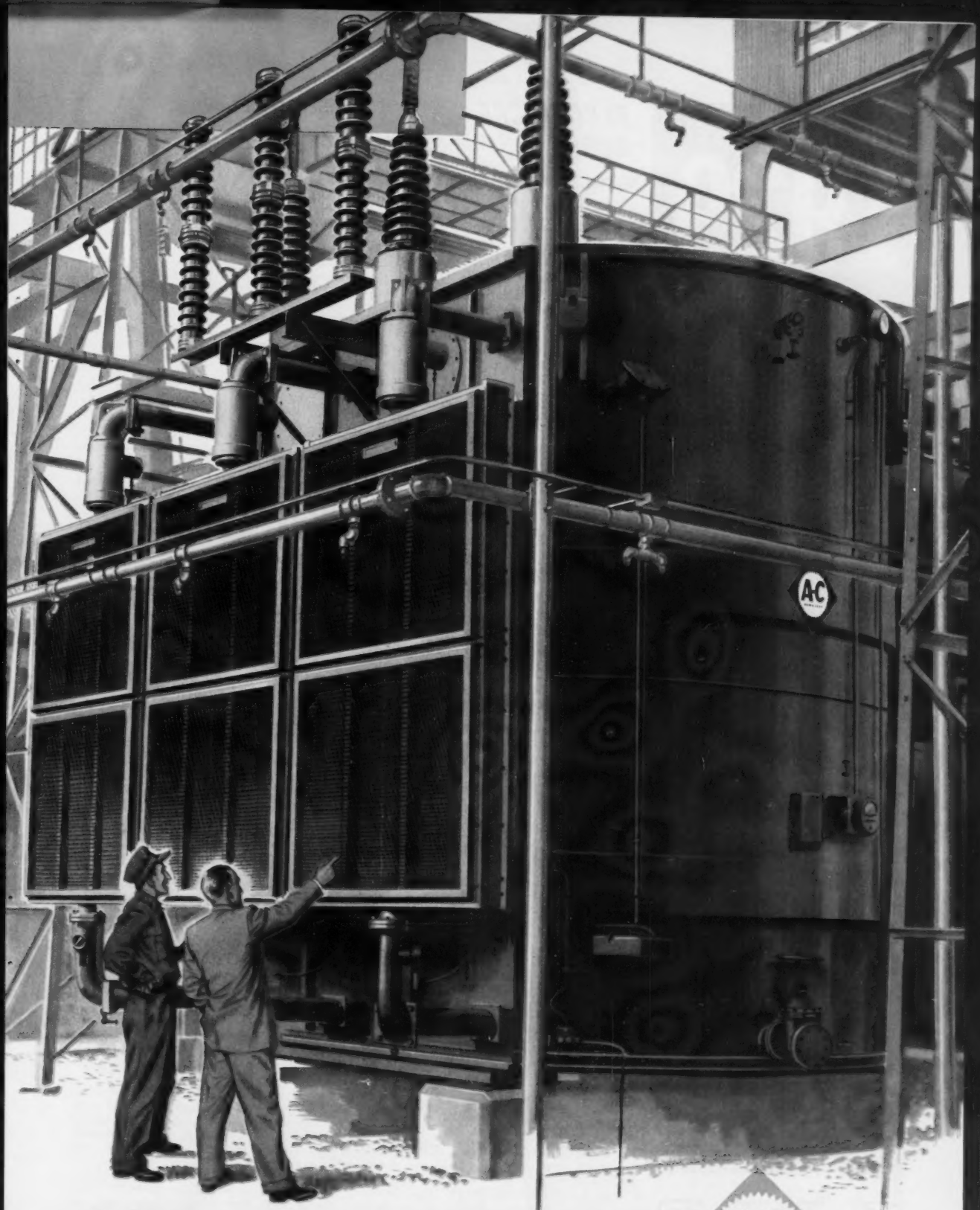
Corona-Free. Like all Allis-Chalmers power transformers, it is corona-free. Regardless of size or number of parts, the creeping deterioration of corona can never shorten the useful operating life of an Allis-Chalmers power transformer.

An Allis-Chalmers representative will be glad to discuss this or other power transformer developments with you at your convenience. Call the nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin. A-4913



LIVE BETTER ELECTRICALLY

ALLIS-



CHALMERS

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ALLIS CHALMERS

THE TIME PROVEN
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FOR YEARS...
THE UNCHALLENGED
LEADER IN ITS CLASS

THE PORCELAIN PRODUCTS 1929 WIREHOLDER IS THE "STANDARD", BECAUSE OF:

Good Basic Design √
Sound Engineering √
Uniform High Quality √
Competitive Pricing √
Dependable Service √
Up-to-date Packaging √

Plus a complete, quality line of secondary service materials!

62 Years
Electrical Porcelain Since 1894.
PP INC
Porcelain Products, Inc.
FINDLAY, OHIO

ELECTRICAL BOOKS

ELECTRICAL GENERATION, STEAM STATIONS, *454 pages, 6x9, edited by Bernhardt G. A. Skrozki, McGraw-Hill Book Co., $8.50.*

A companion to a book dealing with other types of central generating stations edited by the same person, this text is similar in that it uses plain, nontechnical language to carry information, ideas and methods and practical basic principles applied to steam-electric generating stations. Presented are facts on selection and transportation of fuel and design and operation of steam generators and fuel burning equipment, plus other phases of plant operation and design.

RURAL ELECTRIFICATION, *378 pages, 6x9, by J. P. Schaenzer, Bruce Publishing Co., $3.75.*

This is a revised edition that brings into a high school-level text the latest developments in the use of electricity on the farm. New material includes infrared brooding lamps, silo unloaders, silage chippers and other equipment, including major appliances for the home.

INDUSTRIAL ELECTRICITY, DIRECT CURRENTS, *431 pages, 6x9, by Chester L. Dawes, McGraw-Hill Book Co., $4.*

The third edition of this volume has been revised for use at the technical institute level. Explained are principles underlying electrical engineering and electrical engineering apparatus, with each topic being developed from simple principles and formulas. It deals with the simple fundamentals of electricity, electric circuits and other phases of the general electrical engineering field.

ANALYSIS OF ELECTRIC CIRCUITS, *306 pages, 6x9, by William H. Middendorf, John Wiley & Sons Inc., $6.*

Six basic physical laws and definitions of them most important to a basic understanding of circuit analysis are presented in a way that develops the reader's ability to think for himself. Examples and problems are designed to challenge and prod the student in this direction. The author shows the reader that he needs only a thorough understanding of these basic laws and their definitions and apply them with complex algebra to advance to our present wealth of knowledge. Three sections of the book allow one for undergraduate level and two extending the scope for electrical engineering majors.

COPPER WIRE TABLES, *4th Edition, 36 pages, 8x10, National Bureau of Standards, 30c.*

These tables are of special importance to workers in the copper industry, electrical engineering and related fields concerned with the distribution of electrical power.

ELECTRICAL ESTIMATING, *363 pages, 8x10, by Ray Ashley, McGraw-Hill Book Co., $8.*

Every important element of estimating is covered in this handy manual for electrical estimators. Know-how is the best protection in bidding, and presented here are countless valuable tips and guides to help safely streamline bidding procedures. Included are sample estimates, methods of checking estimates, preparation of labor cost units, how to figure markups and many other pointers useful in solving problems of estimating, appraisal, cost accounting and job scheduling.

ELECTRIC GENERATION, HYDRO, DIESEL AND GAS-TURBINE STATIONS, *458 pages, 6x9, edited by Bernhardt G. A. Skrotzki, McGraw-Hill Book Co., $8.50.*

Dealing with central stations other than steam-electric, this text describes fundamentals in plain, nontechnical language and with the use of only simple arithmetic. It is designed to be a self-help for beginners as well as a reference aid for others in a normally technical field. Covers operation, arrangements and control.

EPA TECHNICAL DIGESTS, *United States edition, OEEC Mission Publications office, 2000 P St. N.W., Washington 6, D. C., $24 per year or $2.50 per issue.*

The Organization for European Economic Cooperation will distribute its Technical Digests on an annual subscription basis or for a charge of $2.50 a copy. Contained in the monthly publication are the best articles from European technical and industrial journals, translated and digested.

PROFESSIONAL ENGINEER'S EXAMINATION QUESTIONS AND ANSWERS, *462 pages, by William S. Lalonde Jr., McGraw-Hill Book Co., $6.50.*

A selection of more than 500 questions was drawn from recent actual examinations covering all major phases of professional engineering examinations. For every question there's a detailed answer of the type examiners accept and credit. Fields covered include fundamental engineering and chemical engineering. Many questions are composites of the more complex questions found in professional engineering and examinations all over the United States. The author draws on long experience in preparing license examinations. For the past 20 years he has prepared or consulted on professional engineering examinations for New Jersey.

Efficiency Error

To the Editor:

In the May 1956 issue of ELECTRICAL WEST, a resume of a talk which I presented before the Northwest Electric Light & Power Assn. meeting at Vancouver is given. In this resume, a misquotation is made, which might lead to a very erroneous impression. It is stated that the combined steam gas turbine cycle has "higher efficiency (6½ to 8% increase compared to supercritical steam plant with second reheat stage)."

The article should have stated that the combined steam gas turbine cycle has approximately the same efficiency as the supercritical plant with second reheat stage. The 6½ to 8% increase in efficiency is obtained over a conventional reheat cycle.

P. S. MORSE
Application Engineer
General Electric Co.
Salt Lake City, Utah

Unretouched photo of insulator string from area with corrosive atmosphere — used in television interference investigation.

DO INSULATORS CAUSE TV INTERFERENCE?

For better understanding of television interference problems, a series of tests was recently carried out in the Locke High Voltage Laboratories. Tests showed that suspension insulators do *not* cause TV disturbances except under extremely light mechanical loading combined with contaminated conditions.

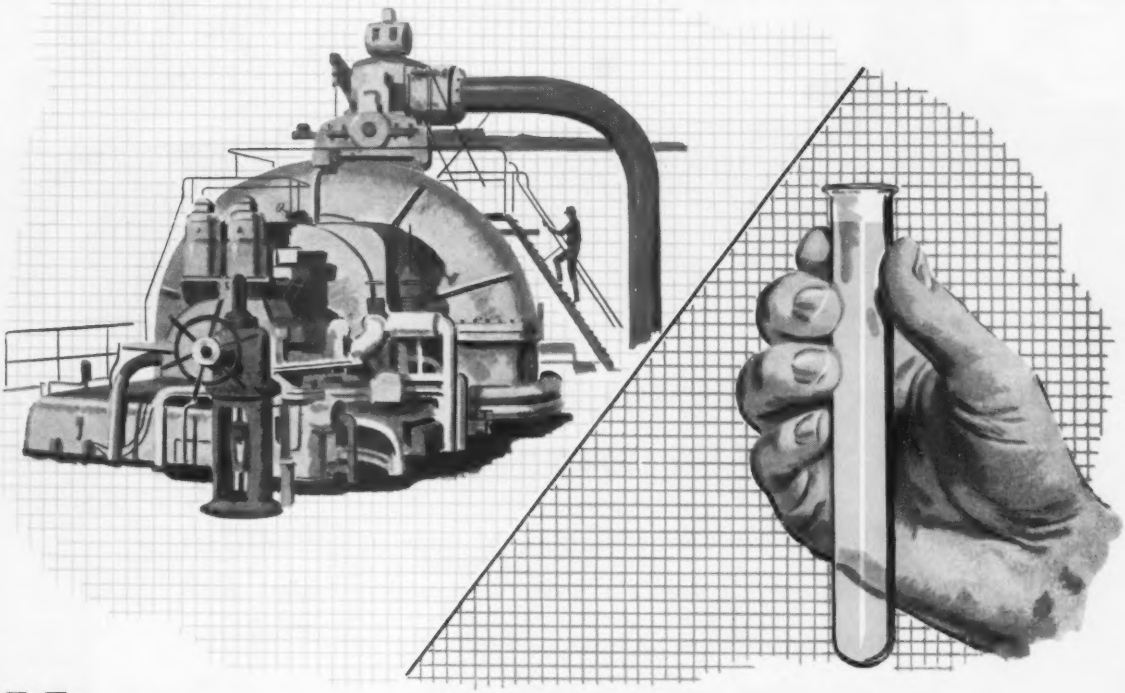
Such investigations are part of our continuing investment in the interest of the Electric Power Industry.

Progress Is Our Most Important Product

LOCKE DEPARTMENT
GENERAL ELECTRIC COMPANY
BALTIMORE, MARYLAND

LOCKE

How much turbine "insurance" can you expect from an oil?



Here's an encouraging answer from Shell men, techniques—and experience:

Research men started at the heart of the problem: Rust and oxidation of oil, they found, were the major causes of turbine troubles.

So they set out to develop an oil with special rust and oxidation fighting qualities. The result of their research is SHELL TURBO OIL—an oil which continues to stop these turbine hazards *long after* ordinary oils fail.

So effective is Shell Turbo, that charges have been in use in several large installations since 1940—with little change in properties and no sign of turbine trouble due to rust or sludge deposits.

This kind of turbine "insurance" is to be expected because Shell Turbo contains some of the *most effective inhibitors known.*

This Shell oil is just one of the many fine products developed by Shell's 1500-man research team—a team with 25 years' experience in lubrication problems.

A telephone call can put this team to work solving your lubrication problems. Call in your Shell representative today.

SHELL®

SHELL TURBO OIL

Indianapolis Power & Light meets area's growth with 100,000 kw addition to White River station

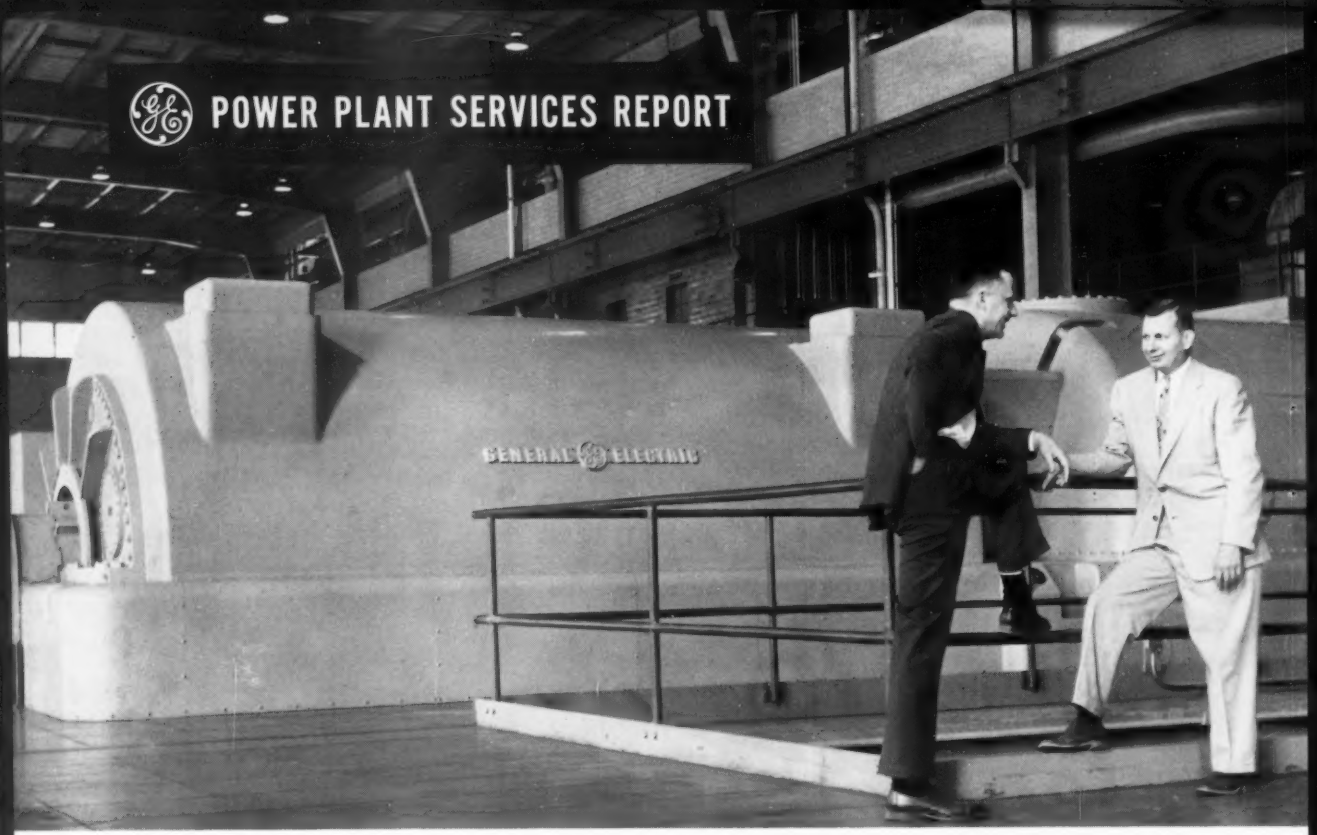
The enormous postwar industrial and residential boom in and around Indianapolis—load has soared to well over twice 1945's figure—meant this: Indianapolis Power & Light had to act fast to keep ahead of its customers' growing demands for electricity.

And act fast it did. More than $100,000,000 have been invested in system expansion since 1947—twice the amount spent during the previous 20 years. The high point of this growth is the White River station.

In expanding this plant by installation of a 100,000-kw G-E turbine-generator, IP&L is stepping up total system capacity about 20%. By specifying "General Electric," the utility and its consultants, Gibbs & Hill, Inc., were able to capitalize on General Electric power plant services . . . saving time, money and manpower.

FOR MORE DATA TURN PAGE ▶

GENERAL ELECTRIC



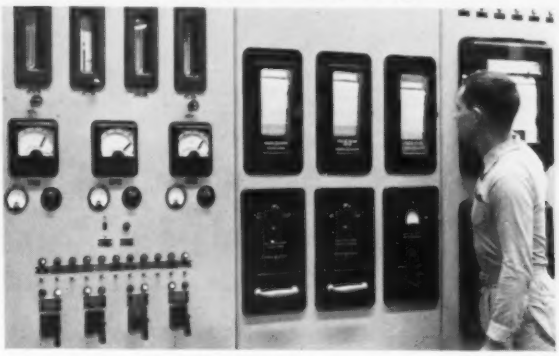
ADVANCE PLANNING, coupled with well-integrated plant and equipment design, helped Indianapolis Power & Light to achieve on-time start-up of new General Electric 100,000-kw turbine-generator at the White River station, latest addition to system.

I. P. & L.'s sixth G-E unit at White River

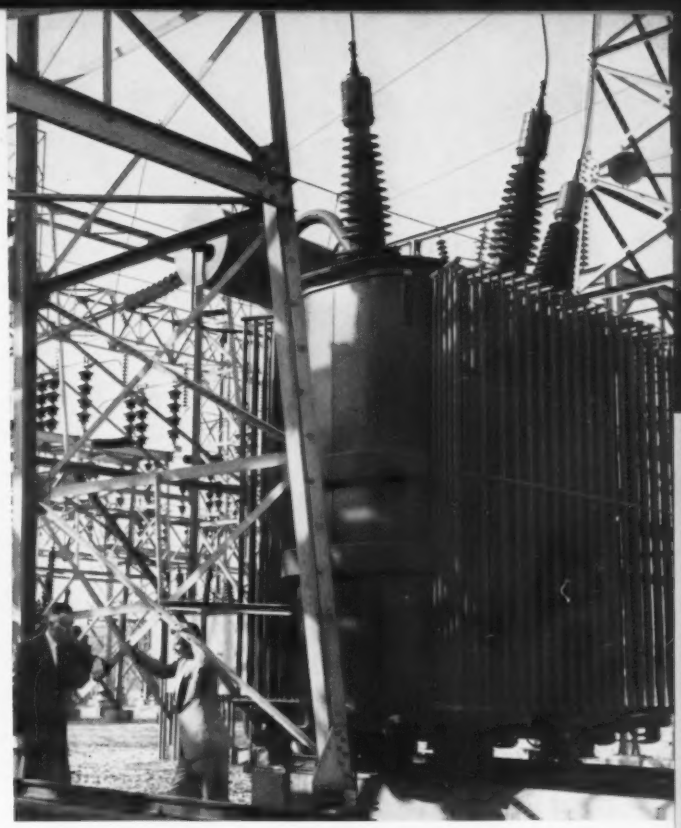
REVIEW of proposed expansion of the White River station is made by D. C. Hess, V. P., Engineering and Construction; J. D. Blythe, Administrative Asst.; H. T. Pritchard, Pres.; all of IP&L, as John Calder, G-E sales engineer, looks on.

STATION'S IMPORTANT PHASES got full attention of E. L. Champion, Gibbs & Hill, Inc. V.P.; IP&L's Pritchard; D. B. Sloan, Gibbs & Hill, Inc., Pres.; and IP&L's D. C. Hess; G-E engineers freed utility, consultant of many details.

INTEGRATED DESIGN of General Electric metal-clad switchgear with other apparatus was assured by G-E application engineers to help give the White River station the advantages of top operating flexibility.



PROPER SELECTION of General Electric turbine-supervisory instruments is paying off for Indianapolis Power & Light in terms of more efficient operation and prolonged life of power generating equipment.



ON-TIME DELIVERY of equipment like the 3750-kva General Electric auxiliary power transformer shown here, assured by General Electric power station services, helped speed power plant construction, and helped reduce installation costs.

fills out co-ordinated expansion program

G-E teamwork with IP&L and Gibbs & Hill, Inc. engineers, assures integrated equipment designs, saves engineering time on White River plant expansion

Sound planning for the future has first priority in Indianapolis Power & Light's expansion program. For example, at the White River station where IP&L had previously installed five G-E turbine-generators, a sixth 100,000-kw unit was recently added to meet expanding load requirements. Each of these units has been carefully co-ordinated with associated electrical equipment in design and operation to assure maximum flexibility and effectiveness in plant operation.

G-E engineers, working with the utility and their consultants, Gibbs & Hill, Inc., co-ordinated the design and construction of the new apparatus to meet more exactly the station's operating requirements.

Such application engineering on new equipment is just one of many G-E power plant services on your job when you or your consultant order G-E apparatus. Product development engineering, field service engineering, and project co-ordination also help to:

Simplify ordering of equipment purchased either directly or through your consulting engineers, or through a machinery manufacturer.

Conserve engineering time by assisting with electrical equipment details, thereby freeing you and your consulting engineers for other urgent problems.

Integrate equipment design with consultant's plant design to assure the maximum flexibility and effectiveness of operation.

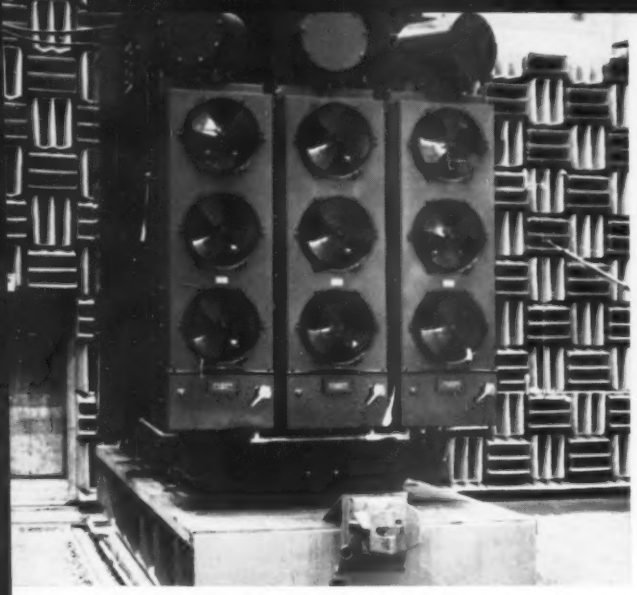
Speed construction by scheduling the arrival and disposition of equipment for maximum installation efficiency and on-time start-up.

Assist in training operators to better understand the full operating capabilities of the equipment.

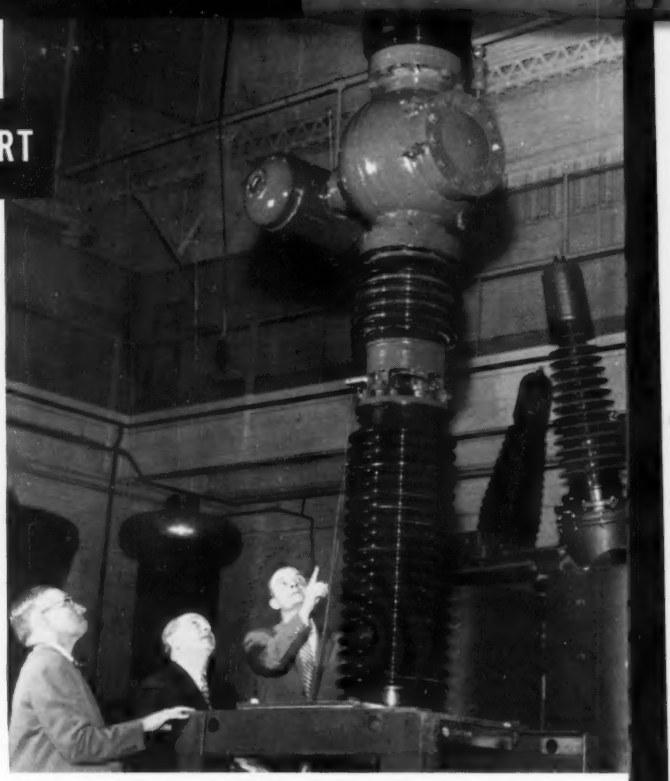
For details, contact your General Electric Apparatus Sales Representative. General Electric Company, Schenectady 5, N. Y. 302-16

GENERAL ELECTRIC

POWER PLANT SERVICES REPORT



FULL-TIME OPERATION of General Electric's Sound Laboratory is helping engineers solve transformer noise problems. Ideal, separate testing area permits accurate measurement of even the slightest gain in sound level reduction.



NEW AIR BLAST POWER CIRCUIT BREAKER forecasts a complete line of such General Electric breakers through 330-kv to help utilities to reduce maintenance costs, and to eliminate scheduled oil filtration and refilling requirements.

Latest G-E product developments point to new advances in cutting system operating costs

Development of a modern air-blast power circuit breaker which promises maintenance savings, and full-time operation of General Electric's multi-million dollar Sound Laboratory—these are just two of many recent events at General Electric that serve to spotlight the technological advances being made every day to improve steam turbine-generators, switchgear, transformers, motors, controls, instruments and other electrical apparatus needed in power stations. And they signify General Electric's continuing program to provide electric utilities with a positive answer to overcome constantly rising system costs.

RECORD EXPANSION INVESTMENT

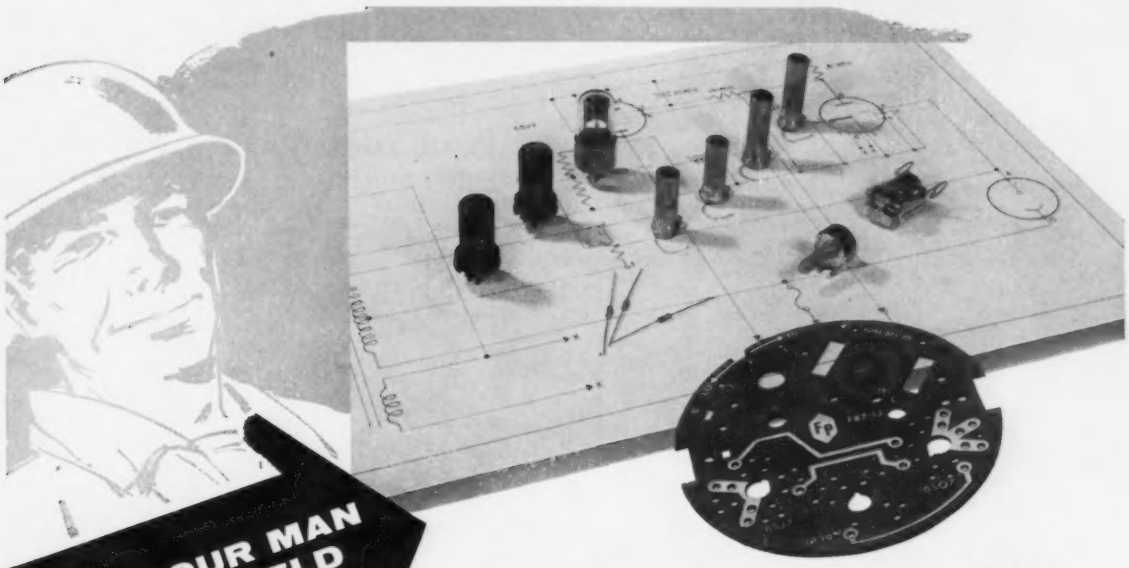
How far will this program go? The answer is dramatically illustrated by the fact that General Electric's record $175 million investment earmarked for expansion of laboratory and manufacturing facilities during 1956 is well on the road to fulfillment.

TEAMWORK IN PLANNING STAGES

As the trends in power station equipment continue to require higher ratings, improved efficiencies, and to maintain reliability, the advantage of selecting General Electric apparatus, compounded with the time-saving, money-saving benefits of G-E engineering teamwork, offers electric utilities a striking example of why it pays to call in G.E. early in your planning. 302-16

MORE POWER TO AMERICA

GENERAL ELECTRIC



ASK YOUR MAN IN THE FIELD ABOUT THE

component quality

OF FISHER-PIERCE PHOTOELECTRIC LIGHTING CONTROLS

A look inside any Fisher-Pierce photoelectric lighting control immediately reveals a primary reason why they require extremely low maintenance and provide long-run economy: *component quality.* Here are specific examples: two *pre-aged* amplifier tubes, instead of one dual triode, for a guaranteed minimum life of 20,000 hours; *wire wound* potentiometer; *Sigma* sensitive relay for low plate current drain of power tube; *linen-based bakelite* sub-mounting chassis and etched circuitry; *metal encased* paper capacitors (no electrolytics); blue-sensitive 1P39 phototube with non-hygroscopic base. No other photoelectric control provides such consistently high component quality. Combined with this are these four other important features:

DESIGN ADVANTAGES — Can be installed, serviced or removed safely and easily • Wide mounting versatility and orientation after bracket installation.

PROTECTION — From surges and lightning, by linen-based bakelite sub-mounting chassis and proper component spacing Circuit and load fuses, and lightning arrestor • Fail-safe operation.

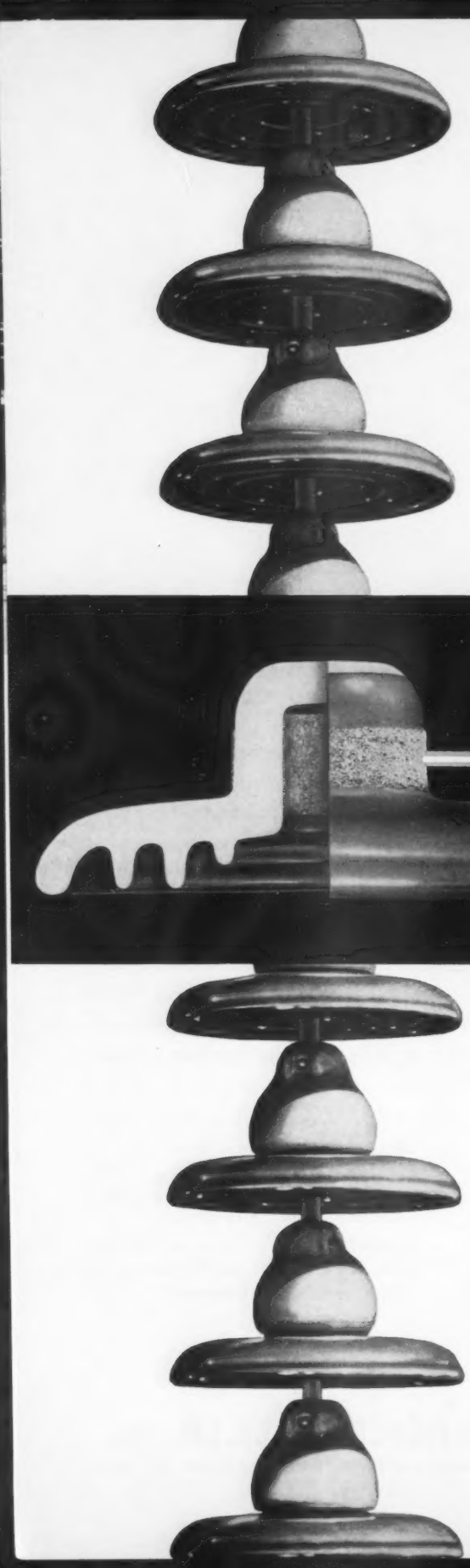
ADAPTABILITY — Three basic series and numerous models for all mounting requirements, operating voltages, load capacities and desired contact arrangements.

DEPENDABILITY — Proven by the thousands of F-P controls used by hundreds of utilities, over the past ten years.

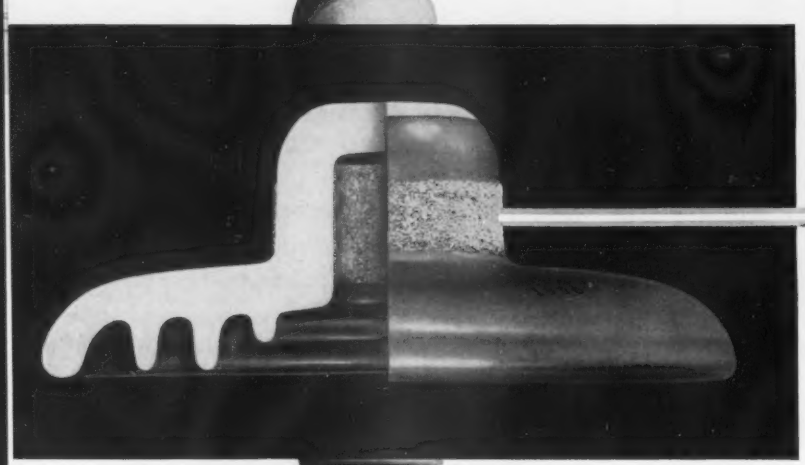
Complete specifications and operating data are contained in informative F-P Bulletins, available on request. Or call the Fisher-Pierce sales representative in your area, for point-by-point proof of F-P superiority.

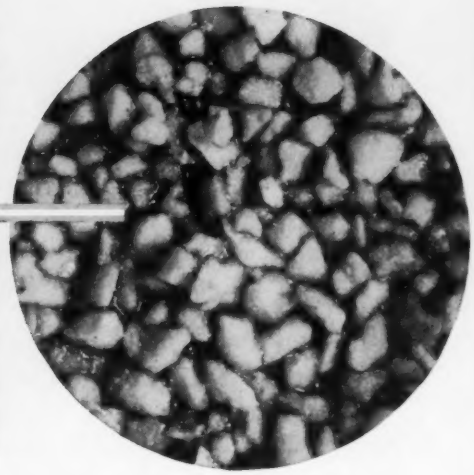
THE FISHER-PIERCE CO., INC.

43 Pearl Street, So. Braintree, Boston 85, Mass.



SECURITY OF YOUR TRANSMISSION LINES depends on reliability and long life of suspension insulator units. In its 40 years, Lapp has made millions of these discs, and never before have we offered so big a dollars-worth in uniformity of mechanical strength, electrical permanence—in assurance of long, trouble-free service on your lines.





STRONG SAND-BANDS make strong insulators. Compression glazing, in which Lapp pioneered, increases the strength of insulator porcelain about 50%. This advantage is largely lost, however, if sand-band areas do not develop the same compression. Lapp meets that problem with "compression sand." This "sand" is true porcelain, but made from a special body with lower coefficient of expansion than the insulator body. The result is that after firing, the fused-on sand-band goes into compression with respect to the insulator shell. Laboratory tests prove the over-all uniformity of Lapp suspension insulator strengths. So do service records on transmission lines the world over.

Lapp Insulator Co., Inc., Le Roy, N. Y.

Lapp

This concrete, marble-faced memorial fountain is described as the "crowning jewel" of the Greater Pittsburgh Airport, seen in background. Almost three miles of Spang conduit carry wires to the underwater fixtures that light the pool at night. All of the work on this project was under the direction of the Board of County Commissioners of Allegheny County; John J. Kane, Chairman, Howard B. Stewart, John M. Walker; also the late Harry W. Fowler and George Rankin, Jr.

SPANG HD protects fountain wiring at world's largest airport terminal

. . . easy bending, corrosion-resistant qualities deciding factors in choice of conduit

County Aviation Director, John B. Sweeney, describes the new $250,000 memorial fountain as a "crowning jewel" to the Greater Pittsburgh Airport, whose terminal is the largest in the world.

At night the fountain's multi-colored, underwater lights turn the airport's entrance into a display of liquid color.

To make this "jewel" glitter, SPANG HD Galvanized Conduit, ranging from ¾" to 6", carries all the wiring to the fountain's lighting fixtures. Here's why this was another *top-quality* SPANG job:

"It took a lot of conduit bending to install the 24 underwater niche lights in the four cascading pools," says Mr. Andrew A. Joos, foreman for E. C. Ernst, Inc. "SPANG's easy bending qualities were one of the chief reasons we used it throughout the entire job."

SPANG's Heavy-Duty galvanized coating is highly resistant to corrosion and white rust, and is ideal for protection against unusually heavy moisture.

SPANG's *quality-control* makes this performance possible. It produces a uniform conduit that is easy to cut, bend and thread, and assures a smooth interior finish for easy wire fishing. The *top-quality*, galvanized finish will not chip, crack, peel or blister even under the most severe bending strains.

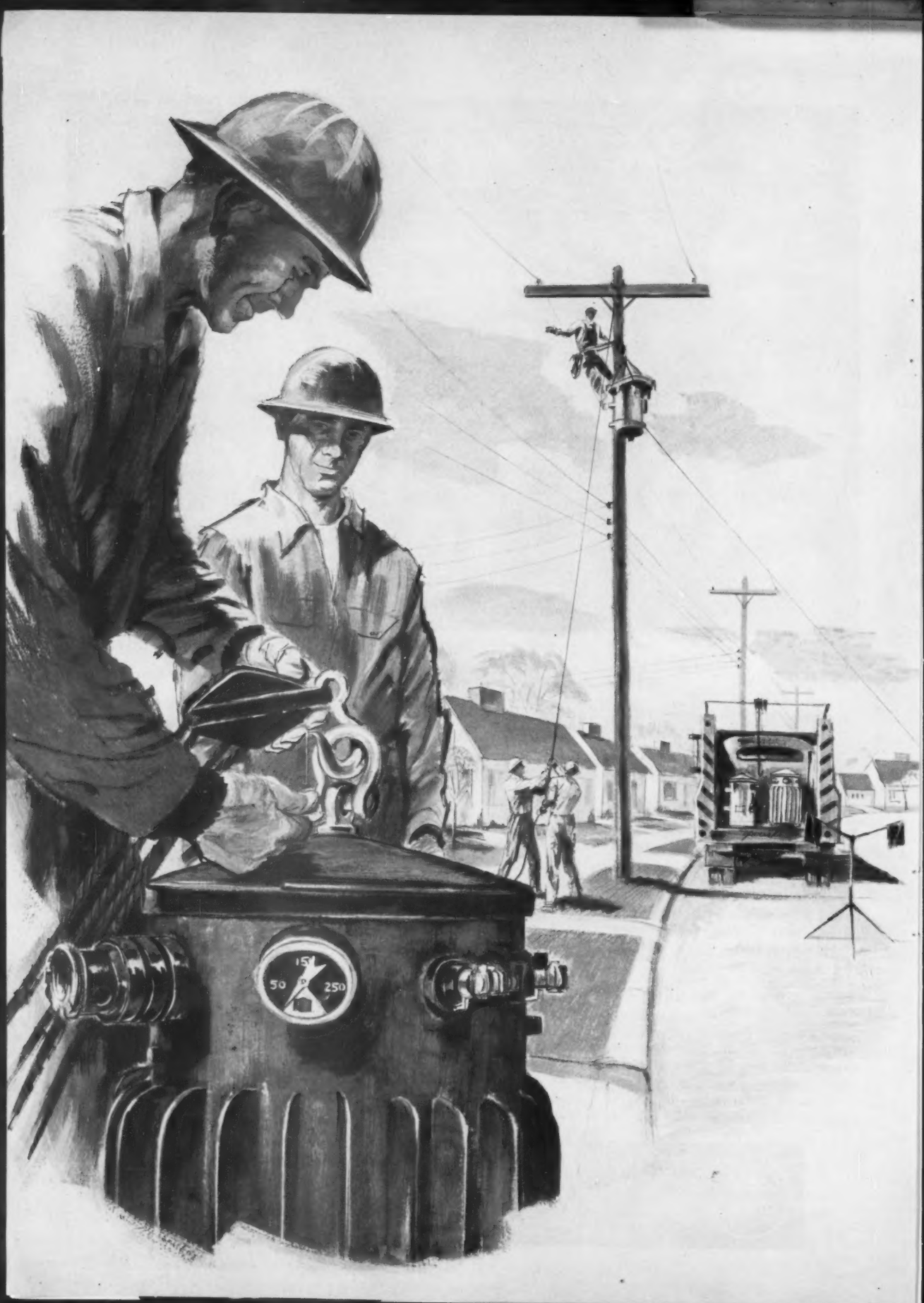
For a faster installation on your next conduit job, use SPANG HD. See your nearest SPANG Distributor.

A workman is shown making one of the many intricate bends required in installing the fountain's conduit. Because of its exceptional bending and corrosion-resistant qualities, Spang HD was used to carry the necessary wiring.

SPANG® CONDUIT

SPANG-CHALFANT
Division of The National Supply Company
GENERAL SALES OFFICE:
TWO GATEWAY CENTER, PITTSBURGH, PA.
District Offices and Sales Representatives in Principal Cities

Owner: County of Allegheny
Architect: Joseph Hoover, Pittsburgh, Pa.
Builder: Groomes Corp., Cheswick, Pa.
Electrical Engineer: Lawrence W. Hornfeck, Pittsburgh, Pa.
Electrical Contractor: E. C. Ernst, Inc., Pittsburgh, Pa.
Spang Distributor: Keps Electric Co., Pittsburgh, Pa.


150
50
250

Moving in soon . . .

New transformers to increase return on your distribution investment

The most talked about news in distribution equipment investments are the new lines of Westinghouse CSP® and conventional transformers. In the CSP transformer, operating range has been boosted as much as 20% . . . without sacrifice of service life. In the conventional Type S, this increased capability is also available. These are head-and-shoulders advantages over any other transformers available today.

Returns to you can be enormous. Greater, longer overloads mean drastic reduction in line emergency calls. Planned change-out schedules can be met more easily.

For the CSP transformer, this means trip-outs—way down. Add to this a 15% boost in breaker settings for maintaining service in emergencies and you have operational flexibility—way up.

Now, imagine a transformer that predicts its own life. The new thermal-duty indicator* in Westinghouse Type S conventional transformers does just that. A signal light shows *when* the unit is overloaded; the indicator dial records *how long*, cumulatively for the life of the equipment. Again—for orderly checkups, change-outs and peak efficiency, this transformer has "economical buy" written all over it.

The result of these exclusive new developments is assistance to you in more effective load management. To meet the vastly increased demand for these new transformers, plants at Sharon, Pa., and Sunnyvale, California, are working around the clock.

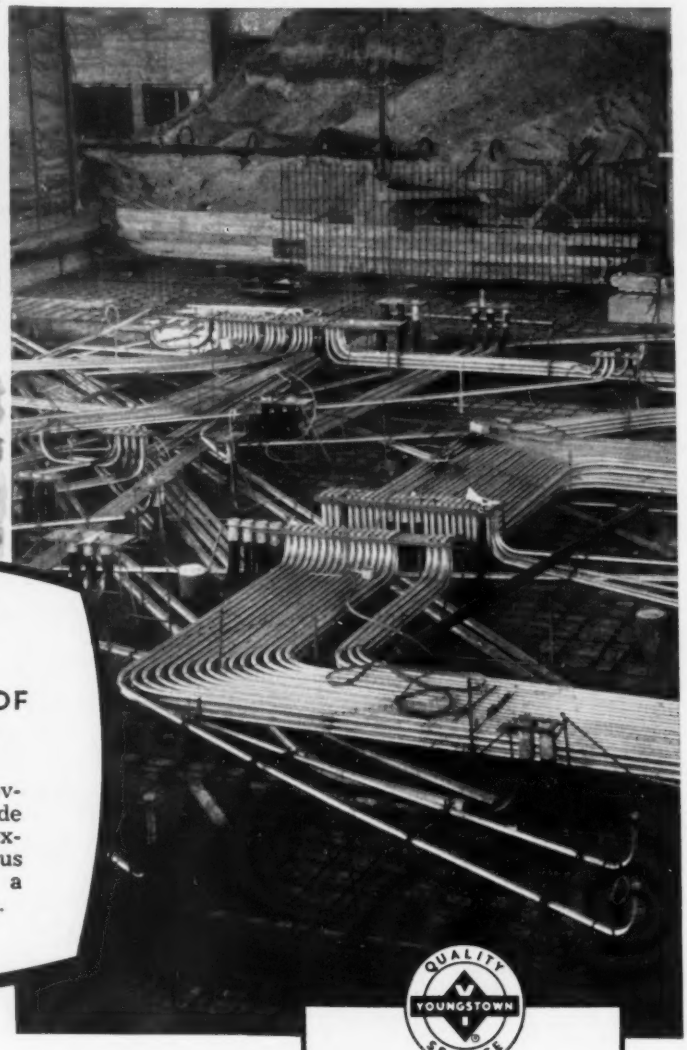
Get in touch with your Westinghouse sales engineer or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70763

* Optional at slight additional cost.

WATCH WESTINGHOUSE!

*WHERE **BIG** THINGS ARE HAPPENING FOR **YOU***

Familiar symbols of safety



PROTECTION OF WIRING

The only wiring system approved by the National Electrical Code as moisture-, vapor-, dust- and explosion-proof for use in hazardous locations and occupancies is a standard-threaded rigid conduit.

Wherever electrical wiring must function safely and efficiently in hazardous locations, install Youngstown Buckeye rigid steel conduit. It is easy to bend . . . easy to fish wires through . . . and economical, because its greater corrosion resistance means a longer, trouble-free service life. When you install Buckeye you're one of thousands of contractors, owners and architects who make it one of the world's best known brands of standard-threaded, full-weight rigid steel conduit.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities

QUALITY YOUNGSTOWN SERVICE

Ask your distributor for Youngstown Buckeye Full Weight Rigid Steel Conduit and Youngstown Electrical Metallic Tubing.

COMBINATION ENTRANCE CAPS Here's a real "2-in-1" entrance cap . . . approved by Underwriters' Laboratories for both rigid conduit and EMT . . . permits stocking of one cap for two purposes . . . eliminates threading of rigid conduit. Comes in sizes from ½" to 2".

THREADED CONDUIT ENTRANCE CAPS Like most other Gedney entrance caps, this one is made of malleable iron to prevent breakage . . . hot dip galvanized for maximum service life. Sizes range from ½" to 6".

ENTRANCE CAPS For S.E. Cables—with key hole mounting bracket. Easy to assemble—cable slips into cap and is securely held by clamping shoe. Has split insulator and well bushed holes. Overlapping cover protects cables from weather. As there is little strain on this fitting it is made of malleable iron.

Cross the threshold to lower costs...with

GEDNEY ENTRANCE CAPS

Malleable Iron–Hot Dip Galvanized

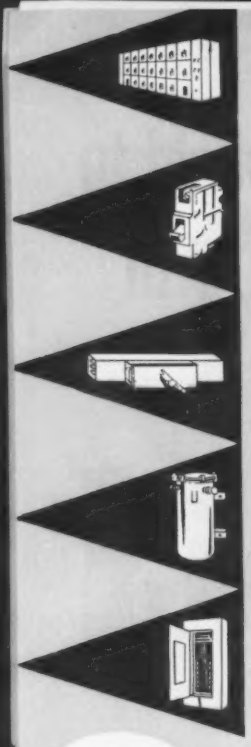
THESE ENTRANCE CAPS install faster—and cut your *final* costs right down to rock bottom. Like all Gedney Fittings they're accurately machined and threaded...smooth finished, with no burrs or metal particles. On top of that, the Gedney line includes many improved design features that bring extra efficiency and labor savings. For fittings that bring today's lowest installed cost, specify Gedney!

GEDNEY FITTINGS FIT

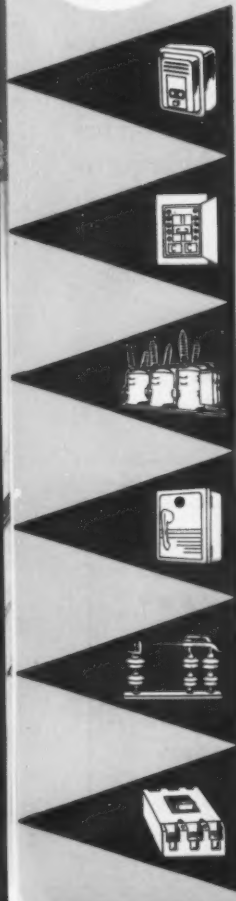
GEDNEY
ELECTRIC COMPANY

GEDNEY

RKO BLDG. • RADIO CITY • NEW YORK 20
Foundry, Factory and Shipping Point: Terryville, Conn.



FPE
FEDERAL PACIFIC ELECTRIC



FEDERAL PACIFIC
GIVES YOU
self-protecting*
oil circuit breaker
operating mechanism

ALWAYS 100% TRIP FREE

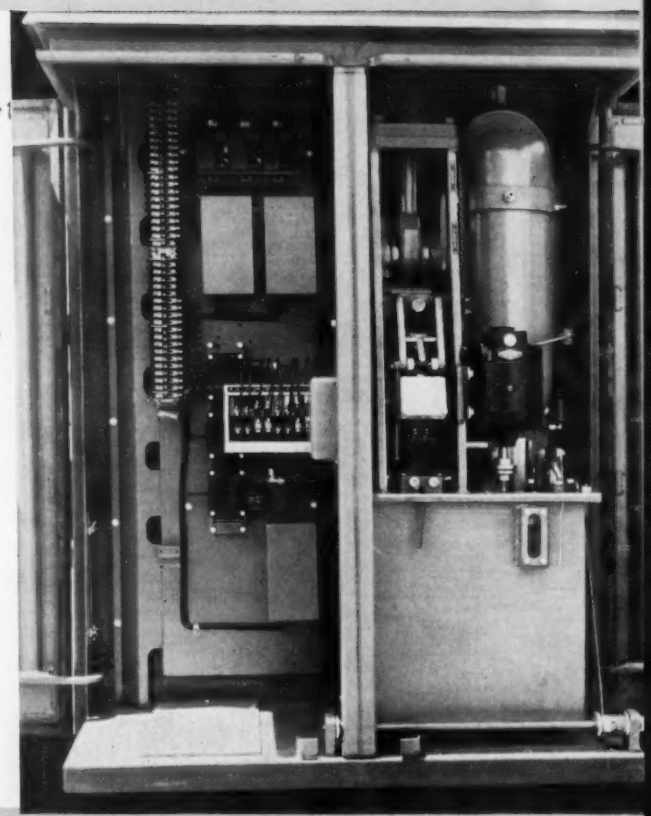
*automatic supervision

Automatic supervision of the hydraulic system protects the breaker against mis-operation.

highest safety factor

The smoothness of operation is such that the breaker may be operated repeatedly without oil in the tanks...thus demonstrating the highest mechanical safety factor.

For details of the Type OA Operating Mechanism write for Catalog No. 4-587: Pacific Electric Switchgear Division, 5815 Third Street, San Francisco, California.



Finest Products Engineered

FEDERAL PACIFIC ELECTRIC
COMPANY
50 Paris Street, Newark 1, N. J.

Recommended for LOW MOUNTING HEIGHTS

HOLOPHANE REFLECTORS

with MERCURY LAMPS

- ***Deep-Shielded Glareless Illumination***
- ***High Output from Long Life Sources***
- ***Low Operating and Maintenance Costs***

Photos Shown: (Above) Wolverine Tube Division of Calumet & Hecla, Inc.; (Below) Kaiser Aluminum and Chemical Co.

For Better Lighting Holophane *Be Specific*

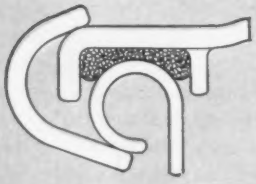
HOLOPHANE

Holophane research has perfected an entirely new and practical approach for illuminating industrial interiors with low mounting heights. The new unit, 635-AL, designed for mercury vapor lamps has proved highly efficient in a wide range of low bay applications. In some of these, the ceiling is as low as 12 feet above the floor, 9 feet above the work plane . . . The unit consists of a metal-covered prismatic glass reflector assembly and ventilated socket housing. Its outstanding features are deep shielding and high outputs in useful lumen zones. The open bottom assures easy maintenance and simple lamp replacement . . . Write for complete engineering data; no obligation.

HOLOPHANE COMPANY, INC.
Lighting Authorities Since 1898
342 Madison Ave., New York 17, N.Y.
THE HOLOPHANE CO., LTD., THE QUEENSWAY, TORONTO 14, ONTARIO

Wagner®
TRANSFORMERS
...the choice of leaders in industry

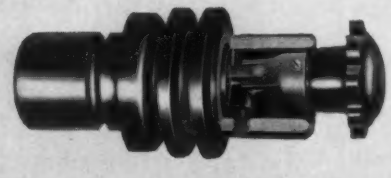
SHUR-SEAL CLAMPING RING



Keeps transformer sealed air-tight . . . no atmospheric moisture or dust particles can get inside. Spring action of lip and ring maintain pressure on gasket. Cover may be removed by loosening a single bolt.

HIGH VOLTAGE SIDEWALL BUSHING

For use with either copper or aluminum conductor . . . safety-designed for faster, easier connections, without tools. Porcelain and terminal are locked in position.



MECHANICAL FEATURES

The rating of each of these new transformers is clearly shown on the tank. There are fewer sharp edges and brackets on the tank where rust can start . . . lifting lugs are curved and rounded.

In the 25, 37½ and 50 Kva ratings, cooling fins increase the radiating surface. The 75, 100 and 167 Kva ratings are provided with tubes.

Wagner

Distribution Transformers

smaller-lighter-easier to handle and install

Now Wagner Form W Distribution Transformers are substantially smaller and lighter than ever before... up to 25% shorter in the important overall height dimension—17% lighter in weight. Yet they are liberally designed for excellent electrical performance.

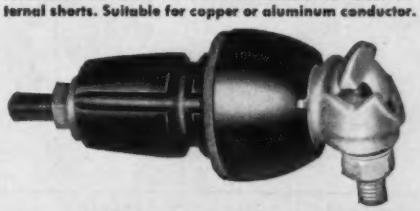
This means greater ease of handling—speedier installation. It also means that you can save money by putting greater transformer capacity on your existing structures... handle heavier loads without installing new poles. All these new Form W Transformers, in ratings 15 through 167 Kva, 15 KV and below, can be pole mounted.

Such reductions in size and weight are made possible by improvements in core and coil construction. A special resin coated insulating material is used for layer, channel and barrier insulation. Heat treating bonds this insulation to the coil conductors to give the coils exceptionally high mechanical and electrical strength.

These new, lighter shorter Form W Transformers will meet your distribution requirements. Consult the Wagner Sales Engineer in your area for complete information.

LOCKED LOW VOLTAGE BUSHING

The bushing and terminal are key-locked to prevent rotation... no loose terminal connections to cause internal shorts. Suitable for copper or aluminum conductor.



INHIBITED OIL

—reduces oxidation to a minimum... retards formation of acids and sludge.

Wagner Electric Corporation EST. 1891

WAGNER ELECTRIC CORPORATION
6381 Plymouth Ave. • St. Louis 14, Mo., U. S. A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

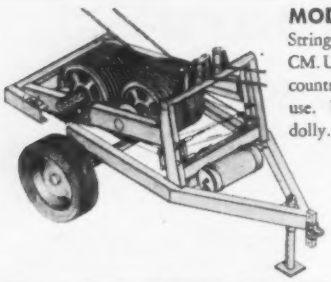
BRANCHES IN 32 PRINCIPAL CITIES

T56-12

Partial showing of the now ***COMPLETE*** line of...

PENGO TENSION WIRE STRINGING EQUIPMENT

Manufactured By PETERSEN ENGINEERING CO., Santa Clara, Calif.

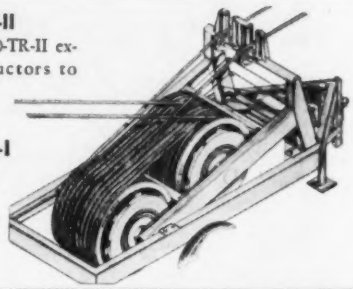


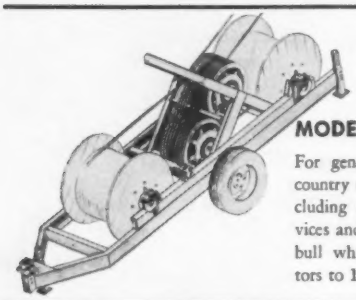
MODEL 5000-TR-II
Strings two conductors to 556,300 CM. Used primarily for very rough country work; also for general use. Use separate reel-carrying dolly.

MODEL 5000-TR-I
Similar except strings one conductor.

MODEL 6000-TR-II
Similar to Model 5000-TR-II except larger. Conductors to 1,272,000 CM.

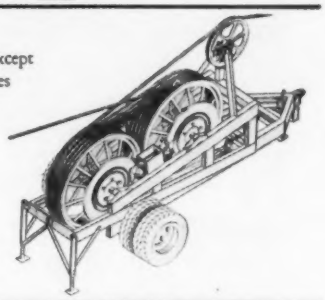
MODEL 6000-TR-I
Similar except for one conductor.

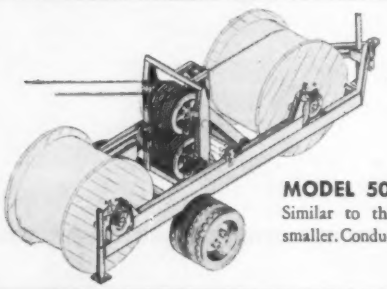




MODEL 6000-WS-TR
For general and medium rough country use. A complete unit including trailer, reel-carrying devices and its own double pair of bull wheels. Conductors to 1,272,000 CM.

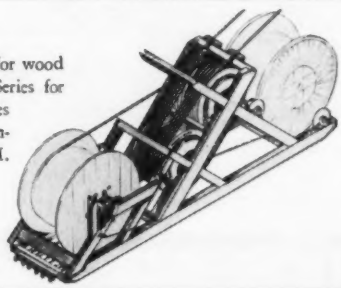
MODEL 7000-TR-I
Similar to model 6000-TR-I except larger. Conductors to 2 inches diameter.

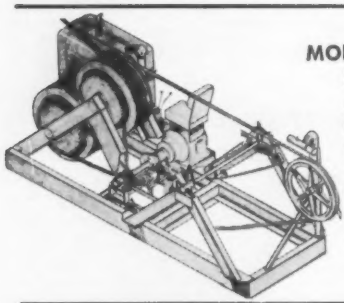




MODEL 5000-WS-TR
Similar to the 6000-WS-TR but smaller. Conductors to 556,300 CM.

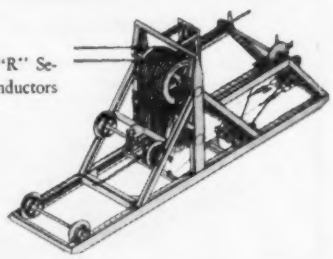
MODEL 6000-W
Available in "S" Series for wood or steel reels, in "R" Series for steel reels, or "SR" Series for trailer mounting. Conductors to 1,272,000 CM.

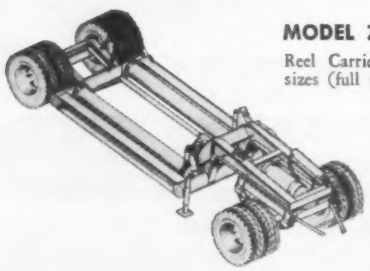




MODEL 6500
Bull Wheel Cable Puller. Available in "R" Series for steel reels, "S" Series for wood reels. Conductors to 1,272,000 CM. Also available in "LWR" Model for extra-large steel reels. Model 5500 similar (smaller).

MODEL 5000-SR
Available in "S" Series, "R" Series, or "SR" Series. Conductors to 556,300 CM.





MODEL 7500
Reel Carrier. Takes the largest sizes (full range) of steel reels. Loads and unloads with one man. No auxiliary equipment needed except the truck that pulls it. For use with any one of the tensioning machines shown on this page.

ADDITIONAL MODELS NOT SHOWN

Tension Reel Trailers

MODELS 2, 3, and 4, Two-Wheel Straddle Dollies not shown. For use with any one of the tensioning machines shown on these pages.

Tension Stringers

MODELS 6000-SK-I and 6000-SK-II For one or two conductors to 1,272,000 CM. Skid mounted for installation on owner's equipment.

MODELS 5000-SK-I and 5000-SK-II Skid mounted for installing on owner's equipment. For stringing one or two conductors to 556,300 CM.

MODEL 5000-WS-III Strings three conductors to 556,300 CM. For mounting on low-bed or full trailer.

MODEL 6000-WS-III Strings three conductors to 1,272,000 CM. For mounting on low-bed or full trailer.

Pengo Tension Wire stringer being used by the Bechtel Corporation stringing 1,033,500 CM ACSR Curlew, Calol-filled Cable for the Southern California Edison Co., Los Angeles, California.

The latest method of stringing conductors

- ***Safest, most economical for transmission, distribution and even secondary lines.***
- ***Its greatest savings are effected when stringing over and through energized circuits... by far the safest, too!***

Operation of the PENGO Tension Wire Stringer is almost unbelievably smooth. Because the tensioning is done on the Neoprene-Lined Bullwheels rather than on reels, conductor damage from the reels has been eliminated entirely. Due to the Neoprene lining of the Bullwheels, it is possible to use a full range of wire sizes to maximum groove capacity, which, in the case of the Model 6000-WS shown in picture, is Pheasant or 1⅜" diameter.

SMOOTH, POSITIVE CONTROL OF CONDUCTOR TENSION can be maintained at all times regardless of model or size of PENGO Tension Wire Stringer used. The large, specially designed PENGO disc brakes are mounted away from the Bullwheels to assure dissipation of the heat generated by the continuous braking action and prevent transmission of the heat to the Bullwheels.

In addition to the model shown in the picture, all series are available in low-slung trailer mounts for mountain work with separate easy-loading reel trailers.

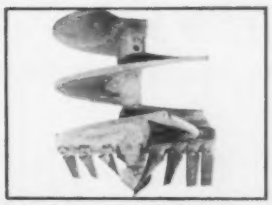
List your requirements and send for descriptive literature and prices.

PETERSEN ENGINEERING CO.
Santa Clara, California Dept. 3
Please send me more information on the new Pengo Tension Wire Stringer.
Name_____
Firm_____
Address_____
City_____ State_____

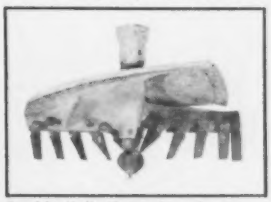
Made by the makers of the World-Famous
PENGO EARTH AUGERS

PETERSEN
ENGINEERING COMPANY
Santa Clara, Calif.

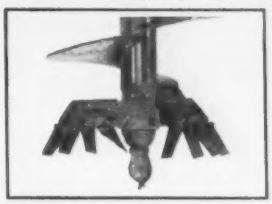
Other PENGO Products include:



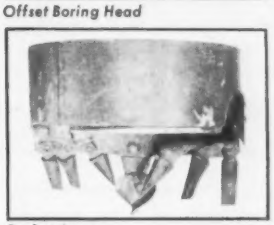
24 inch Heavy Duty Flight Auger



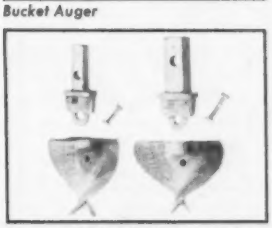
Double-Helix Heavy Duty Auger



Offset Boring Head

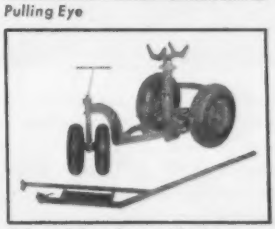


Bucket Auger



Screw Bit for Small Diameter Holes

Pulling Eye



Pole and Transformer Chariot

PRODUCT NEWS

New Designs and Applications

Pictured is the rotor for what is said to be the world's largest motor. It is part of a reversible pump-turbine unit designed and built by Allis-Chalmers Mfg. Co. for TVA's Hiwassee Dam. The rotor is 330 in. in diameter. This dual-purpose machine is rated 70,000 kva as a hydraulic turbine-generator and 102,000 hp as a pump driving motor. It is designed to generate electric power during peak periods in the day time, drawing from stored water, then to pump the water back later

Transformer Overload Indicator

(1) Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

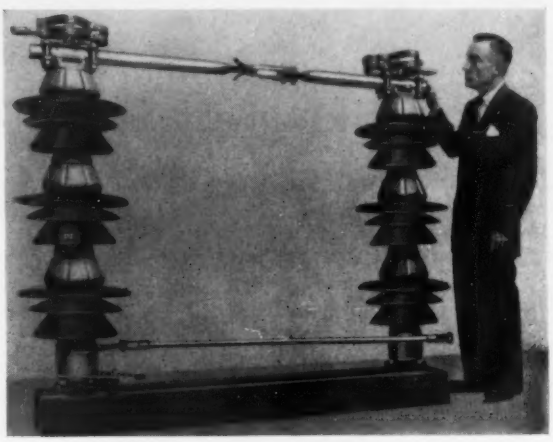
A total of 300 overload hours on conventional distribution transformers is recorded on the dial of a new overload indicator offered by this company. The unit consists of a control thermostat, a timing mechanism and a signal light that serves as auxiliary warning. The dial is readable from the ground.

Seattle City Light has placed three new Dodge line service trucks with Stahl Mfg. Co. utility bodies into service. Outstanding equipment on the trucks are two wire reels that can pay wire out either parallel to the truck or at right angles. Each has a brake. The trucks have loudspeakers to amplify radio messages so the serviceman can hear them as he works on a pole. One-ton trucks are used. The reels are manufactured by Line Material Co.

Radiant Heating Cable

(2) Everwarm Inc., 2925 N. Central Ave., Knoxville, Tenn.

Development of a new line of dual-purpose electric radiant heating cable is announced by this company. The new installation concept applied is said to have exceptional toughness yet can withstand repeated 180° bends without cracking or rupturing. Available in steps of 200 w from 400 to 2,000 and steps of 250 w from 2,000 to 4,500 in the 240-v series. In the 120-v series, cable is in 100-w steps from 300 to 1,000, and 125-w steps from 1,000 to 1,500 w.



Aluminum High-Voltage Switch

(3) Federal Pacific Electric Co., 50 Paris St., Newark 5, N. J.

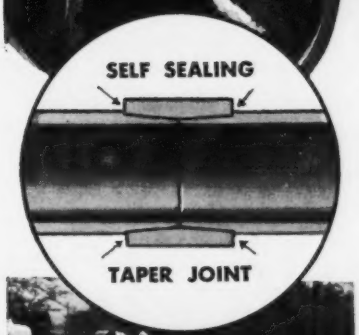
This company has developed an experimental aluminum high-voltage switch rated at 115 kv, 1,200 amp. The big experimental switch does have copper flexible conductors at top, contact springs and clip contact shoes. Tongue contacts have solid-silver inserts brazed to copper pads on copper-coated aluminum blade end. Connections between copper and aluminum are made by copper-aluminum bimetals. The switch will be exhibited at the San Francisco plant of the company June 28.

Modified Step Regulator

(4) Allis-Chalmers Mfg. Co., 1126 S. 70th St., Milwaukee, Wis.

A new type of connection to underground conductors on this step regulator eliminates top or side junction boxes by enclosing conventional bushings below the load tap changing compartment. The new design is said to simplify installation, improve substation appearance and minimize space requirements for underground cable installations.

SMOOTH BORE!



Orangeburg Fibre Conduit Prolongs Cable Life

Protect cable sheath from abrasion and you prolong the life of underground cables, say utility engineers. Scoring of cable sheath creates "trouble spots" that shorten cable life.

That's where Orangeburg Fibre Conduit plays an important part in keeping cables healthy. Orangeburg's smooth bore, its low coefficient of friction minimize the danger of abrasion when cables are pulled in, as well as later on during cable movement. By protecting cable sheath from abrasion, Orangeburg Fibre Conduit adds years to cable life.

Orangeburg's impermeable wall and watertight joints protect cables from corrosive ground waters. Its nonmetallic material is strong, tough, resilient, long lasting.

And, remember, Orangeburg lays faster and at lower cost than other types of conduit. It is light in weight, easy to handle, easy to tool on the job. Spacers, bends, fittings, 5° bend sections and lightweight tapering tool, all combine to simplify installation.

Since 1893, records of long life have proved Orangeburg's durability and economy.

Orangeburg Fibre Conduit is distributed by Graybar Electric Company and General Electric Supply Company with branches and stocks in principal cities.

WRITE DEPT. WE-66 FOR NEW CATALOG 52

ORANGEBURG MANUFACTURING CO., INC., Orangeburg, N. Y. West Coast Plant, Newark, Calif.

ORANGEBURG®
FIBRE CONDUIT

Pat. Pend.

*KLEIN KUT PLIERS
for both regular and heavy-duty cutting

It was Klein that produced the first and still the finest regular side-cutting plier. Klein also gave the industry the modern, streamlined version so much in demand.

And it's Klein again with a new, high leverage cutting plier for light- or heavy-gauge wire, including No. 2 weatherproof hard drawn solid copper wire, and A.C.S.R.

There's no extra hinging of any kind—no uncomfortable wide-spread handles—with this new Klein-Kut Plier. The offset hinge permits the extra-high leverage and operation is as smooth and easy as with any other Klein Plier. Forged from high-grade tool steel, individually fitted, tempered, adjusted and tested. Ask for No. 213-9 N.E. for streamlined pattern.

Regular pattern available
Same high-leverage design, but in the original Klein side-cutting pattern. Ask for No. 213-9.

Write for free Copy of Bulletin 1054

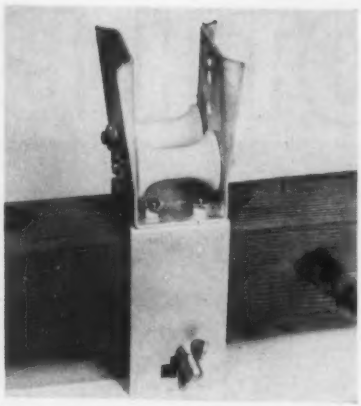
*Trade Mark

ASK YOUR SUPPLIER

Foreign Distributor: International Standard Electric Corp., New York.

"Since 1857"

Mathias Established 1857 KLEIN & Sons Chicago, Ill., U.S.A.



Cable Stringing Block

(5) Distribution & Hi-Line Specialities Co., 2100 Del Norte St., St. Louis 17, Mo.

These new conductor stringing blocks feature molded nylon spools for greater resistance to abrasion. Designed for use with large aluminum or copper conductors, weatherproof cables and supports for large cable, aerial cable and large bus.

Socket Meter Mountings

(6) Code Products Corp., 214 Kalos St., Philadelphia 28, Pa.

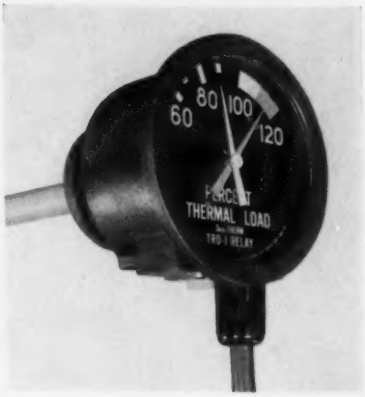
Mountings for 150- and 200-amp meters are now available from this company. Features include pivoting wire terminals, plated copper parts, by-pass connections and a porcelain block.

Hubbard Aluminum Products Co. Inc., Pittsburgh, Pa., designed this pole extension for a bridge at Fairmont, W. Va. Concrete pedestals of the bridge were not high enough, so Hubbard designed a special casting that would permit use of extensions. A Monongahela Power Co. employee is shown guiding the extension and 400-w fluorescent fixture into position here

Switch and Bus Insulators

(7) Lapp Insulator Co. Inc., LeRoy, N. Y.

Six insulators, with a nominal rating of 230 kv, are listed in a new series of Station Post insulators for 196/287-kv switch and bus use. Three of the series have a BIL withstand rating of 900 kv, are 80 in. high and are available with cantilever strengths of 910, 1,450 and 2,750 lb. The other three have a BIL level of 1,050 kv; are 92 in. high and are available in strengths of 750, 1,170 and 2,300 lb. There are only six cemented joints on the new stacks, compared with 20-24 on others.



Thermal Relay

(8) Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

This new thermal relay is designed to combine overload protection with automatic starting of cooling equipment and can be used on power transformers of all types. Mounted in an oiltight well in the transformer wall, a bimetallic element is heated by both the top oil and by a heater coil that carries a current proportional to the load in the main winding. An indicating dial has two pointers to indicate the operating position of a relay and also to give a reference reading expressed in "per cent thermal load." Will operate either on a-c or d-c up to 250 v.

Rubber-Covered Transformer

(9) Jefferson Electric Co., Bellwood, Ill.

A mercury-vapor transformer housed in a permanently bonded rubber case is offered by this company. Main advantage is that it can be buried directly in the ground, eliminating the need for a pole base, reports the manufacturer.

New products continued on p 81

BULLETIN H-307-256

NOW!
IT'S NEW!
IT'S AUTOMATIC!

Moloney's New Distribution Transformer Plant Makes Dependable HyperCore Transformers Better Than Ever

Completely mechanized, Moloney's new distribution transformer plant employs assembly methods similar to those in the auto industry . . . doubling Moloney's capacity. In addition, EACH transformer is tested . . . automatically . . . by Moloney's new and automatic test system. Each transformer must meet NEMA standards plus Moloney's own high standards . . . or it's electronically rejected—automatically.

Moloney's new and automatic test system is your assurance that dependable HyperCore Transformers are better than ever . . . and performance proved. Moloney's increased production capacity makes superior HyperCore Transformers immediately available . . . when you need them . . . in the quantities, ratings and types you need.

MOLONEY ELECTRIC COMPANY

SALES OFFICES IN ALL PRINCIPAL CITIES

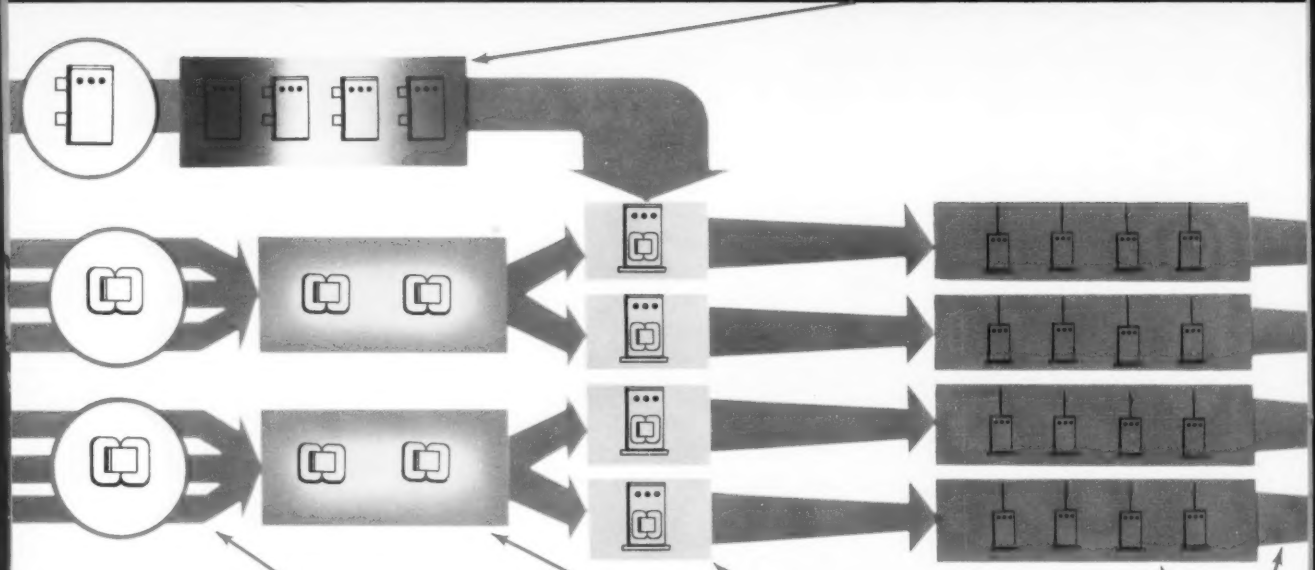
FACTORIES AT ST. LOUIS 20, MO. AND TORONTO, ONT., CANADA

STREAMLINED, MECHANIZED ASSEMBLY AND AUTOMATIC TEST LINES

Moloney's double production capacity and increased production flexibility makes dependable HyperCore Transformers immediately available in the quantities, ratings and types your utility requires.

Dependable HyperCore Transformers are better than ever . . . because every

After paint spraying and thorough baking, tanks are conveyed to assembly lines on crate bottoms to keep adjacent tanks separated, preventing scratches throughout assembly and test lines.



Schematic Flow Chart

Multiple core-and-coil assembly lines for HyperCore Transformers permit flexible production scheduling. After assembly, core-and-coil units receive complete ratio tests.

Conveyors move core-and-coil units through drying ovens . . . automatically . . . for heat treatment to remove moisture.

Immediately after drying treatment, core-and-coil units are tanked. Bushings, leads, and all final assembly operations are completed.

Conveyed into vacuum tanks while core-and-coil units are still well above ambient temperature, transformers are vacuum treated to remove any residual moisture and filled with precisely the right amount of oil . . . automatically . . . while under vacuum, preventing the trapping of air in transformers.

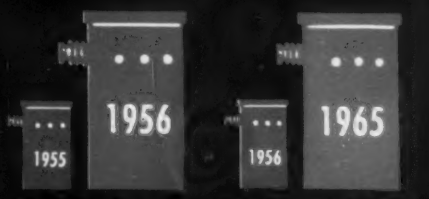
Final closing of tanks is done immediately after vacuum treatment. Tank covers are sealed by a confined corprene gasket

MOLONEY ELECTRIC

SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES

DOUBLE CAPACITY . . . ASSURE 100% TOP QUALITY

transformer is tested — automatically, while on a moving conveyor belt . . . eliminating human error. Electronic test equipment, designed specifically for each test, tests each transformer, analyzes results, approves perfect transformers . . . or rejects substandard transformers—automatically.

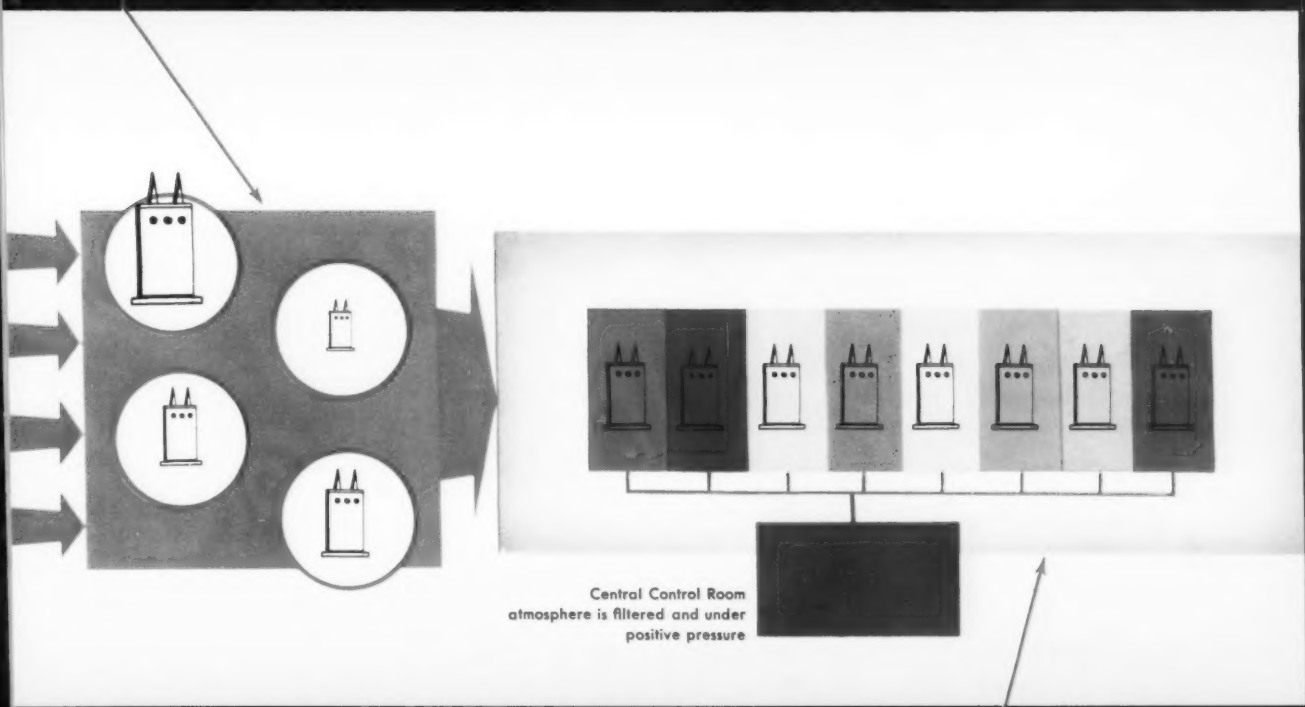


Production Capacity Doubled . . . NOW

Utility Demands Estimated To Double by 1965

Moloney Increases Production Capacity Today To Meet Utility Expansion Plans for Tomorrow

Transformers of similar ratings are grouped before testing to facilitate accurate, automatic tests.



Central Control Room atmosphere is filtered and under positive pressure

COPPER LOSS test equipment checks transformers for good circuits and connections . . . substandard transformers are rejected.

RATIO test equipment checks transformers for correct voltage ratio and ratio adjuster setting . . . or automatically rejects substandard transformers.

IMPULSE test proves each transformer capable of withstanding impulse surges . . . or automatically rejects substandard transformers.

INDUCED POTENTIAL test equipment proves turn, layer and divisional insulation quality . . . or automatically rejects substandard transformers.

APPLIED POTENTIAL test equipment proves winding and ground insulation quality . . . or automatically rejects substandard transformers.

CORE LOSS test equipment measures and records core loss and exciting current . . . and automatically rejects substandard transformers.

SOUND test equipment measures and records the audible noise level . . . and automatically rejects substandard transformers.

CSP BREAKER test equipment checks breaker operation under overloads, checks overload signal lights . . . and rejects substandard transformers.

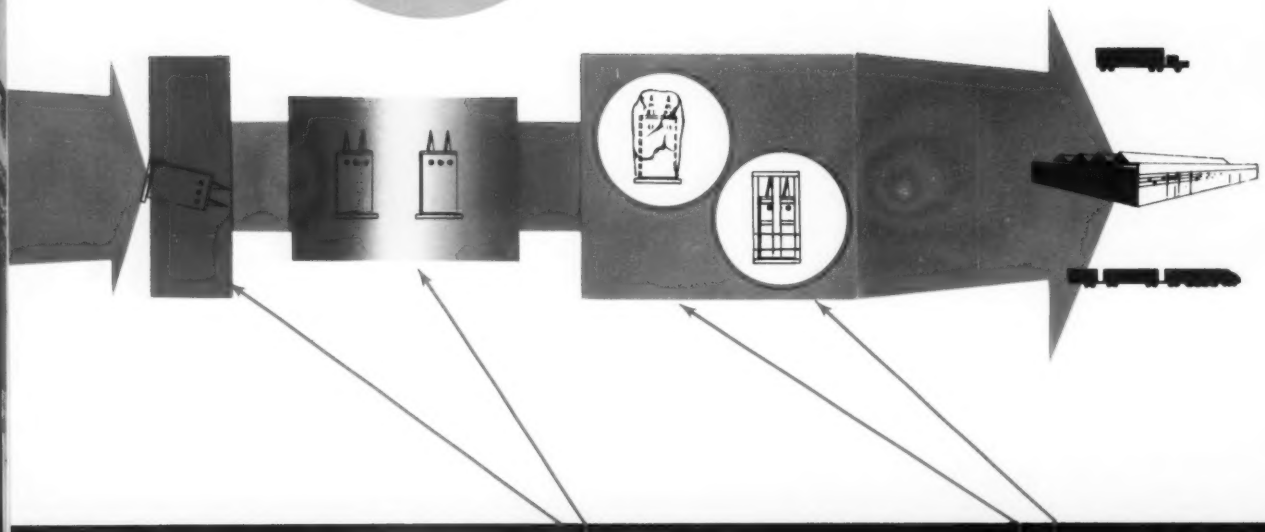
C O M P A N Y

AT ST. LOUIS 20, MO. AND TORONTO, ONT., CANADA

SPECIFY MOLONEY HYPERCORE TRANSFORMERS

They're tested and performance proved . . . automatically assuring dependable transformers — the best made — for your utility.

Warehoused throughout the country, better than ever HyperCore Transformers are immediately available when you need them . where you need them . . . and in the quantities, ratings and types desired.



Leak testing by tilting transformers . . . automatically . . . to slightly more than 90 degrees assures perfectly sealed covers and bushings.

Touch-up paint, if required, is sprayed on just before crating and baked by infra-red heat . . . just like the original paint . . . assuring a uniformly durable, weather resistant surface.

Polyethylene plastic covers protect transformers in shipment or storage . . . keeping them clean and fresh until needed.

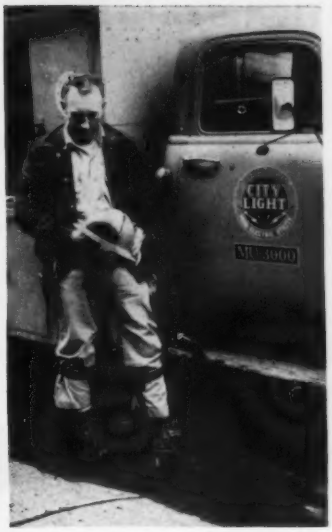
Rigid, durable wood crates protect transformers against accidental damage and reduce handling costs in shipping or storage.

LITHO IN U.S.

M O L O N E Y E L E C T R I C C O M P A N Y

Power Transformers • Distribution Transformers • Load Tap Changing Transformers • Regulating Transformers • Step Voltage Regulators • Primary Unit Substations • Secondary Unit Substation Transformers • Network Transformers • Series Street Lighting Transformers • Subway Transformers • Industrial Dry Type Transformers • Capacitors • Magnetic Components For Electronics

SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS 20, MO. AND TORONTO, ONT., CANADA

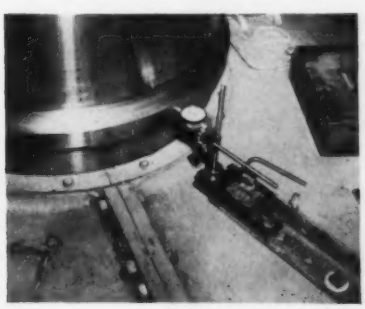


An outstanding similarity between these two photos is found in the thoughtful expressions of the two men, Robert S. Johnson, left, and Harvey Jensen, right. Johnson, a lineman for Seattle City Light, examines a Mine Safety Appliances Co. helmet that took the main force of a flash caused when a 4,160-v feeder contacted another phase. Jensen, a groundman with Pacific Power & Light Co., examines the 10½-lb cutout that fell 32 ft and struck his MSA helmet. In each case, the hard hats prevented serious injury and probably death

Rust Preventive Spray

(10) Eastern Aerosol Products, Newfoundland, N.J.

Packaged in a 12-oz aerosol spray container, this new rust preventive compound is said to be a clear, dry waxy film capable of withstanding even salt water immersion. Does not collect dirt and dust. One container has enough solution for 80-sq ft coverage, the manufacturer reports.



The "throw" of the shaft of a 140,000-hp generator is being determined here with the aid of a Starrett No. 665 Dial Test Indicator. It is being used on the fourth unit of the Kemano power house of Aluminum Co. of Canada in British Columbia. The indicator reads in half-thousandths from 0-25-0 and has a spindle travel of .125 in. Made by L. S. Starrett Co.

Secondary Capacitors

(11) Line Material Co., 700 W. Michigan St., Milwaukee 1, Wis.

These new 7½-kvar, single-phase, 240-v capacitors are designed for power factor correction on secondary distribution circuits, and are said to meet all NEMA standards. Over-all height is 23½ in.; diameter is 5 in. Can be mounted with bushings up or down.

Ceiling Incandescent Fixture

(12) Peerless Electric Co., 576 Folsom St., San Francisco, Calif.

Shallow design, wide distribution and quick installation are features of this new incandescent ceiling fixture, according to the manufacturer. A single screw mounts it on any ceiling.

200-Amp Meter Socket

(13) Square D Co., 4335 Valley Blvd., Los Angeles, Calif.

A heavy-duty 200-amp meter socket for residences and small commercial establishments is being introduced by this company. Usable on three-wire, one-phase or three-wire, three-phase services. Features include lay-in lugs and heavy-duty porcelain base. Construction is raintight either for indoor or outdoor use.

Load Pickup Switch

(14) Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Many cold load pickup problems on circuit breaker and recloser protected systems are said to be solved by this new 15-kv, 200-amp load pickup switch. It can be used for all voltages, from 2.3 kv to 14.4 kv, single phase or three phase. The switch automatically sheds the load it controls following a two-minute loss of system voltage. It closes to pick up the load increment with adjustable time delay up to five minutes after restoration of voltage.

Box Covers

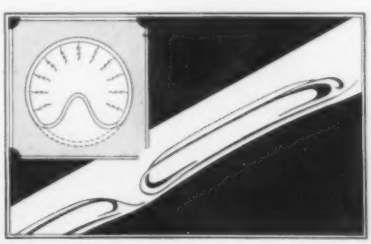
(15) Keystone Mfg. Co., 23328 Sherwood Rd., Center Line, Detroit, Mich.

Rounded corners, curved edges, easy mounting and sizes to fit all standard boxes are reported features of this new line of box covers. Designed for industrial, commercial and residential installations. Catalog available.

Transformer Base

(16) Moloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.

Steel runners on this sled-type base for substation transformers allow easy sliding in any direction. For 225-, 333- and 500-kva transformers.



Fluorescent Lamp

(17) General Electric Co., Nela Park, Cleveland 11, Ohio

A completely different tube design doubles the light output of these fluorescent lamps, the manufacturer reports. The design feature is a series of lengthwise dents or grooves along one side of the 8-ft tube, which gives a maximum circumference of the tube while constricting its inside area. The greater light output results from an increase in area of the lighted tube surface, the higher wattage the tube can be operated and the more effective use of energy within the tube.

DISTRIBUTION TRANSFORMERS

THIS PAINT

COULD SAVE YOU $15 to $160

Estimate your possible savings in terms of all transformers on your lines

Super Melaglyp, the new G-E paint, gives 50 per cent longer life than the previous finish under normal conditions, and up to 150 per cent longer life under corrosive conditions. This longer paint life means that you save one, perhaps two repaintings. At an average repainting cost of $15 per transformer, that amounts to a real saving.

In areas where corrosive industrial "smog" and other chemical fumes literally eat an ordinary finish down to the base metal, Super Melaglyp makes possible even more dramatic savings. For ordinary paints under such conditions may even cause a transformer to fail. In one case, a 5-kva, 7200-volt transformer, battered by spray in a remote seacoast location, rusted, leaked, and failed. Cost of service trip plus replacement added up to $160.

Developed in G-E laboratories after more than four years of experimentation, we believe Super Melaglyp is by far the best outdoor finish available today for distribution transformers.

Look at the other money-saving features that prove "All Transformers Are Not Alike": **Impulse testing,** for instance, saves years of transformer life. One-piece **clamping bands** save maintenance time. Reuseable **Nitrile rubber gaskets** save units from contamination. **AL/CU terminals** are designed to prevent both copper and aluminum conductors from loosening. **Strenicor clamps** save terminals from breaking. **Nationwide warehouses** save utilities inventory expense. **Service shops** can cut your repair and rebuilding costs.

For the complete story contact your nearest G-E Apparatus Sales Office or G-E Agent—or write to General Electric Co., Schenectady 5, N. Y. 431-38

dollar-saving features prove ATANA*

*ALL TRANSFORMERS ARE NOT ALIKE
(make this simple comparison and see)

FEATURE	General Electric	Mfr. A	Mfr. B	Mfr. C	Mfr. D	Mfr. E
Production-line impulse testing	√			√		√
Nitrile rubber gaskets	√					√
One-piece clamping band	√					
H-v and l-v terminals handle both copper and aluminum conductors	√					
Strenicor pressure terminal clamps	√					
Super Melaglyp paint	√					
More than 100 warehouses	√	√				
Nationwide, company-operated service shops	√	√				

Progress Is Our Most Important Product

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

Alexander the Great, who, before he was 30 conquered almost all the known world, was history's hardiest character. Schooled by Aristotle, conditioned to endure unbelievable extremes of cold, heat, hunger and thirst, Alexander, though always outnumbered in battle, always triumphed.

GREAT... WHEN IT COMES TO ENDURANCE

Alexander the Great's physical endurance was legendary, well-nigh superhuman. Toughness and resistance were vital in Alexander's time . . . and they are today, too—in the cables that serve as the nerve system of transportation, power and industry.

Moisture, heat, cold, deteriorating elements, time itself—all combine to make inroads on cable installed underground, under water, or exposed to the air.

Kerite is designed to withstand these conditions—for years. Incredible as it may seem, Kerite Cable, in perfect operating condition after 30, 40, 50 and more years service in rugged applications throughout the world is the *rule* rather than the exception.

Nothing, of course, lasts forever . . . but Kerite lasts indefinitely. It represents one of the wisest investments in *service* that can be made.

The value and service life of a product can be no greater than the integrity and craftsmanship of its maker.

Founded 1854

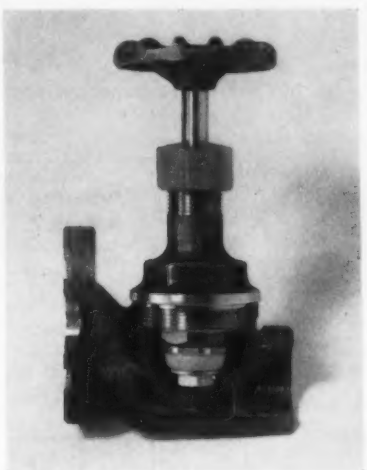
KERITE CABLE

THE KERITE COMPANY—30 Church St., New York 7, N. Y.
Offices also at 122 S. Michigan Ave., Chicago; 582 Market St., San Francisco;
3901 San Fernando Rd., Glendale 4, Calif.; 31 St. James Ave., Boston

Conductor Packaging

(18) Kaiser Aluminum & Chemical Corp., 1924 Broadway, Oakland 12, Calif.

Wood lagging is eliminated by a new packaging method for aluminum conductor by this company. The new protective packaging consists of Kraftboard, shock-absorbing material and a second layer of Kraftboard. It is reported to be more convenient and to provide greater weather and shock protection.



Oil Drain Valve

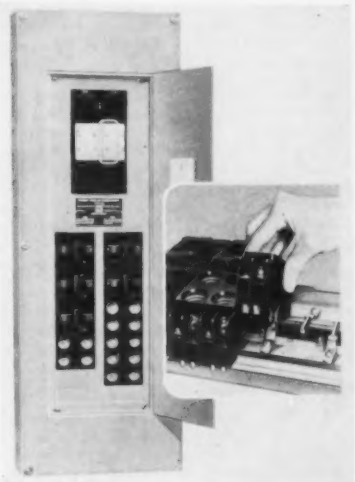
(19) Moloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.

Development of a new oil drain valve for use on substation-type transformers is announced by this manufacturer. All transformer oil is permitted to drain out freely because the valve seat is ⅛ in. below the transformer tank bottom plate. Valve is of nylon and brass.

Oil Circuit Breaker

(20) Federal Pacific Electric Co., 50 Paris St., Newark 5, N. J.

An oil-hydraulic accumulator-type operating mechanism eliminates the need to remove moisture or frost from lines of this new oil circuit breaker, according to the manufacturer. The 69-kv breakers are rated at 2,000 amp, 3,500 mva and 5,000 mva, with five-cycle interrupting time and 20-cycle reclosing time. Complete use of hydraulics is reported to greatly reduce end-of-stroke shock.



Fusible Service Entrance Devices

(21) Square D Co., 4335 Valley Blvd., Los Angeles, Calif.

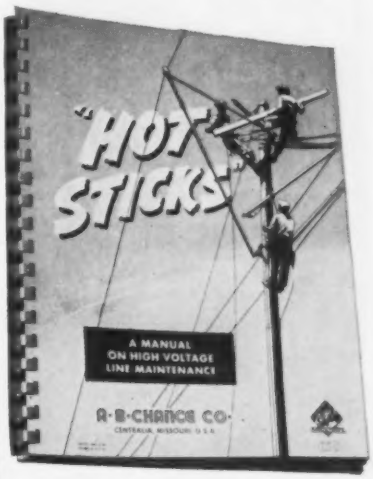
Plug-in construction of fusible service entrance devices gives a wider flexibility in obtaining proper circuit combinations, according to this manufacturer. Basic devices are available with a 200-amp main pullout and space for 28 or 40 plug fuse branches. Plug-in branch circuits are of two types, plug fuse or 30- and 60-amp pullouts. Pullouts are designed to fit the space of four plug fuses and any combination of pullouts and plug fuses is available.

Shallow Power Outlet

(22) Harvey Hubbell Inc., Bridgeport, Conn.

Measuring 1.296 in. from mounting plate to base, this new power outlet is reported to be one of the shallowest. Designed to fit a minimum size single-gang box without touching the box sides. Will fit any standard single switch box. Available grounded and ungrounded, 30 amp.

GET YOUR COPY OF "HOT STICKS"



The complete HOT LINE Tool manual

Here's the manual on HOW TO DO HOT LINE WORK that linemen all over the country have been asking for. It's the most comprehensive, most authoritative guide to safe high voltage line maintenance ever published!

It contains 162 pages of detailed explanations—and has hundreds of drawings and diagrams that show every important operation.

Supply your live line maintenance crews with this valuable aid to safety. Price is $2.50 a copy. Use the coupon below to place your order.

A. B. CHANCE CO.
212 N. ALLEN ST. • CENTRALIA, MO.

Please send us . . . . . copies of "Hot Sticks" priced at $2.50 a copy.

Our check for $. . . . is enclosed.
Bill us for . . . . copies.

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COMPANY

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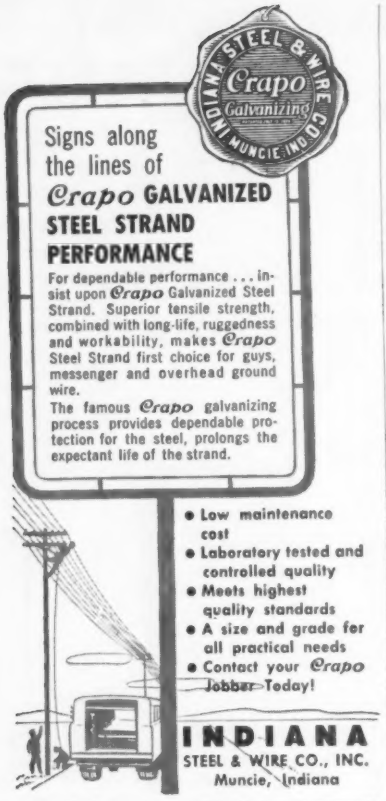
INDIANA STEEL & WIRE CO. MUNCIE, IND.
Crapo Galvanizing
Signs along the lines of Crapo GALVANIZED STEEL STRAND PERFORMANCE
For dependable performance . . . insist upon Crapo Galvanized Steel Strand. Superior tensile strength, combined with long-life, ruggedness and workability, makes Crapo Steel Strand first choice for guys, messenger and overhead ground wire.
The famous Crapo galvanizing process provides dependable protection for the steel, prolongs the expectant life of the strand.
• Low maintenance cost
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For new construction and maintenance —Everstick Anchors speed up work and provide dependable anchorage on all types of jobs. Made of resilient, rust resistant malleable iron. The toughest anchors made. Write for bulletin.

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BULLETINS ETC.

(23) MERCURY-VAPOR LIGHTING—"Color Corrected Mercury Vapor Lighting for Indoor Sports and Assembly Areas" is the name of a booklet available from the application engineering department of Holophane Co. Inc. Information presented is supplemented with case histories and illustration. Address is 342 Madison Ave., New York 17, N. Y.

(24) AIR SWITCHES — Application, description and dimension information about horizontal opening air switches is contained in a 20-page booklet of the R&IE Equipment Division, I-T-E Circuit Breaker Co., Greensburg, Pa. Voltage range is from 7,500 to 161,000 in all momentary ratings.

(25) AIR CONDITIONING—This catalog contains complete specifications on all Airtemp summer and winter air conditioning models. Information would interest builders, architects, consulting engineers, contractors and homeowners. Ask for Form L-233. Address requests to Airtemp Division, Chrysler Corp., Advertising & Sales Promotion Department, 1600 Webster St., Dayton 1, Ohio.

(26) INDUSTRIAL LIGHTING—"Better Industrial Lighting with Mercury Vapor" is the name of a booklet published by Sylvania Electric Products Inc. Typical applications of mercury-vapor lighting in industrial situations are illustrated with photos. Booklet is available at all Sylvania sales offices.

(27) HOME INSULATION—"How To Insulate Your Home for Electric Heating" is the title of a recent publication of the National Mineral Wool Assn. Prepared with the cooperation of the National Electrical Manufacturers' Assn., the booklet states the advantages of electric heating as well as present insulation standards. Single copies available free from National Mineral Wool Assn., 2906 Americas Bldg., Rockefeller Center, New York 20, N. Y. A charge is made for quantities.

(28) ENGINEERING OPPORTUNITIES—A colorful, highly informative collection of articles about opportunities for electrical engineers is being offered by Line Material Co., 700 W. Michigan St., Milwaukee 1, Wis. All articles are by top electrical industry leaders and engineers, and are written to attract today's students to tomorrow's electrical industry.

(29) DISTRIBUTION TRANSFORMERS — Design and product data on single- and three-phase distribution transformers, with high-voltage ratings from 480 to 15,000 v, have been published by Gardner Transformer Division, Federal Pacific Electric Co., Emeryville 8, Calif. Ask for bulletin 3-500.

(30) FOG CLEARANCE — A brochure available from the Fog-Master Division, Diesel Power Inc., Box 72, Greenville, Pa., describes the principle and equipment of Fog-Master, a device said to relieve ground fog conditions often found around areas where industrial steam is prevalent.

(31) BUS CONDUCTORS—To help with selection of bus conductors, American Brass Co. has published a 62-page booklet with tables regarding such shapes as channels, ventilated square tubes and round tubes. Ask for C-25, "Copper Conductors," American Brass Co., Waterbury 20, Conn.

KILL TWO BIRDS WITH ONE STONE — Fill out this coupon and get back valuable information from as many sources as you indicate.

ELECTRICAL WEST
68 Post St., San Francisco 4, Calif.

Not good after August 1

Please send me, without obligation, the new product information or catalogs:

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Standard Engineer's Report

CASE HISTORY

PRODUCT Calol Multi-Service Oils

FIRM Pacific Gas and Electric Company

No compressor deposits in 10,337 hours work!

ORIGINAL CHARGE OF CALOL MULTI-SERVICE OIL still keeps these 8 Clark compressor engines clean and lubricated after 2 years or 10,337 hours operation. There is no appreciable wear on parts, oil shows no deterioration, and neutralization number was only 0.55 at last test. These engines are in P. G. and E.'s Kettleman Hills, California, compressor station on the "Super Inch" gas line.

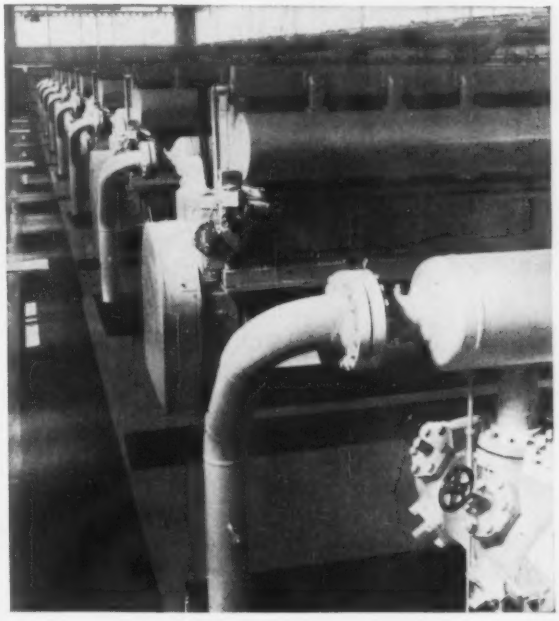
NOTE PERFECTLY CLEAN CONROD, CRANK and baffle—photographed through inspection hole. All parts are free of lacquer and deposits. Calol Multi-Service Oil in these engines also lubricates compressor cylinders, journals, and crankpins.

FREE CATALOG: "How to Save Money on Equipment Operation" will be sent on request to Standard Oil Company of California, 225 Bush Street, San Francisco.

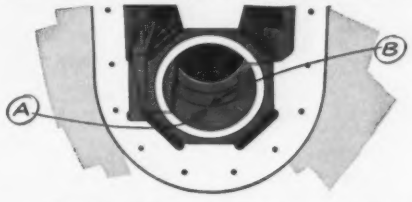
FOR EXPERT HELP on lubrication or fuel problems, call your Standard Fuel and Lubricant Engineer or Representative, or write to 225 Bush Street, San Francisco, California.

CALOL

TRADEMARK "CALOL" REG. U. S. PAT. OFF.



How CALOL Multi-Service Oil cuts costs in all types of compressors



In crankcase and on cylinders, Calol Multi-Service Oil reduces wear and oil consumption—has cut consumption 20% in air compressors.

A. Oxidation-resistant compounds prevent formation of varnish. Detergent keeps contaminants suspended in oil, prevents foam.

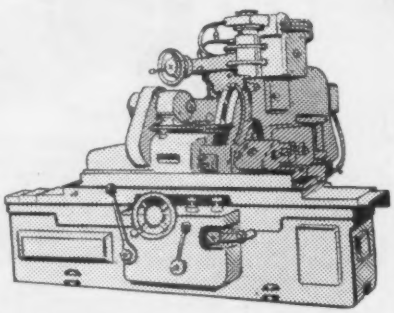
B. Special compound assures "hot-spot" lubrication...covers surfaces rapidly. Calol Multi-Service Oils also recommended for pumps, diesel engines, enclosed gears.

STANDARD OIL COMPANY OF CALIFORNIA

Here's Why We Use SQUARE D Starters on the Machines We BUILD

PERFORMANCE When you get right down to it, the performance record of any machine tool depends a lot on how the control behaves. We know, from a lot of past experience, that Square D starters are designed to deliver the kind of trouble-free performance that keeps our customers happy.

FLEXIBILITY Another thing we like is the flexibility we get with Square D's starter design with packaged parts kits. It's a cinch to make last-minute changes in interlocks, coils and overload relays. That's important because it means we don't have to keep a big stock of starters with a lot of modifications.



FIELD ENGINEERING SERVICE

When we're designing machines that call for more complicated electrical control, it's mighty nice to have a Square D Field Engineer handy to work with us. As a matter of fact, he'll carry the ball just as far as we say—even to developing the control circuit for a multi-station machine.

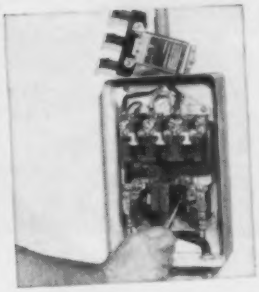
SQUARE D COMPANY

Here's Why We Specify
SQUARE D Starters
on the Machinery We BUY

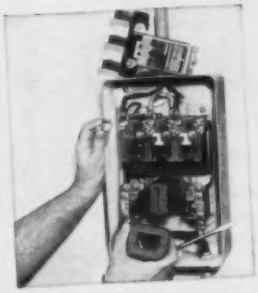
PERFORMANCE, EASY INSPECTION AND MAINTENANCE

Sure, we like Square D performance because it keeps our "down time" at a minimum. BUT—everybody knows that even the best starter needs periodic inspection and preventive maintenance. We like the way Square D makes it easy to handle those routine jobs.

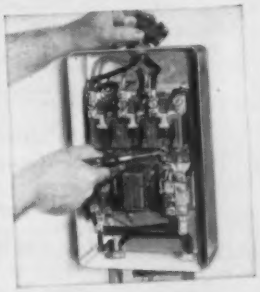
1 Loosen two screws and the arc chamber cover comes off. Every contact surface can be inspected at a glance.



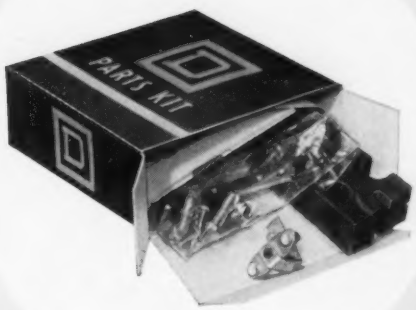
2 Remove four screws and entire movable assembly can be lifted off. Disconnect two wires and slip off magnet coil.



3 Contacts are attached with separate screws—they can be removed and replaced without disturbing any wiring. A screwdriver is the only tool needed.



4 Sizes 0 through 4 starters have these separate mounting electrical interlocks for easier installation. Contact block is attached from front of panel with two screws.

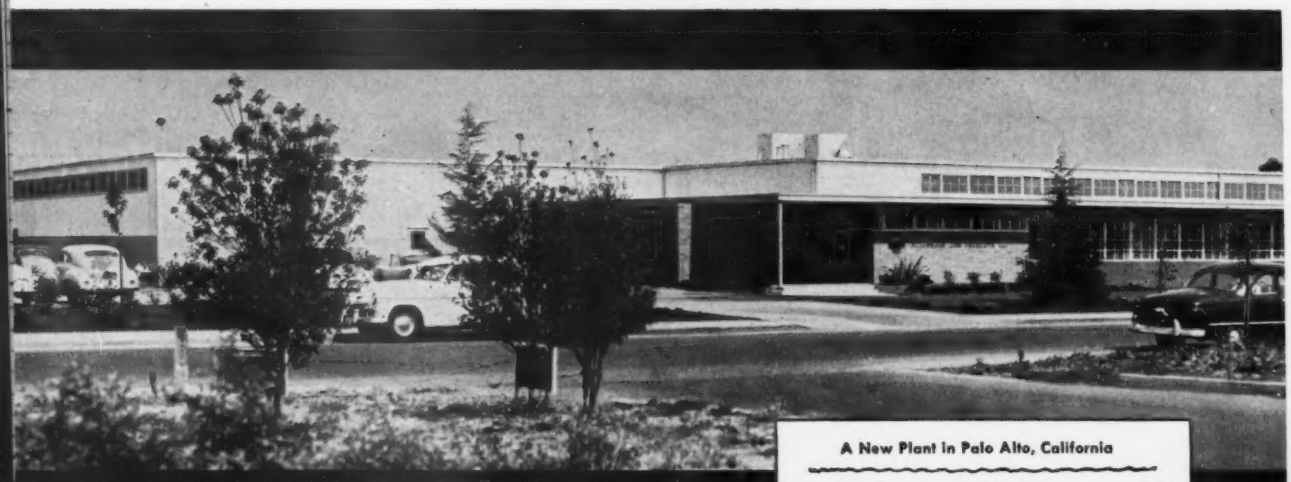


OFF-THE-SHELF PARTS KITS

They make normal maintenance and modifications easier than ever. Packaged parts include interlocks, contacts, coils, overload relays, pushbuttons and selector switches. They're easy to buy, easy to identify, and faster to install.

Everybody's Ahead with Square D!

A Good Idea Grows with

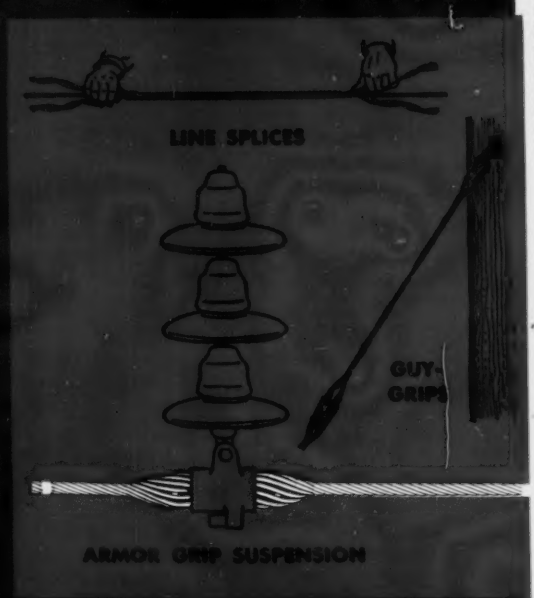


A New Plant in Palo Alto, California

Situated in the well-planned Stanford University's Light Industrial tract, this modern plant now serves the industry on the West Coast.

In Cleveland, There Are Now Two Plants

Preformed Line Products Company first opened its doors in Cleveland, Ohio. With a new addition—above—it now ranks as one of the fastest growing Companies in the area. The original plant on the left still serves as Home Office.



SALES REPRESENTATIVES C. B. Anderson Co., Tulsa, Oklahoma City, Amarillo, Lawton. • Belcher and Associates, Inc., Jacksonville, Miami. • Bergstrom-Verbarg Co., Minneapolis. • Vincent J. Brown Co., Buffalo, Syracuse. • Burns Electric Co., Pittsburgh. • Carlton Cooley, St. Louis. • F. C. Clatterbaugh, Omaha. • Earl S. Condon Co., Los Angeles. • Cory and Crum, Indianapolis. • The Electrical Distributors Co., Philadelphia. • Engineer Sales Co. of Carolina, Columbia. • J. S. G. Electric Co., Chicago. • E. L. Flowers, Westwood. • George R. Horne and Co., Dearborn, Toledo. • Johnson Sales Co., Bay City. • H. L. Macan and Co., Atlanta. • Peterson Co., Denver. • Elgin B. Robertson, Inc., Dallas, Houston. • K. M. Ryals Co., San Francisco. • Shaffer and Nelson, Portland, Seattle, Spokane. • M. H. Snyder & Sons, New York. • Curtis H. Stout & Co., Little Rock, Memphis, New Orleans. L. G. Wendegatz, Kansas City.

the Industry It Serves...

The *Preformed* Armor Rod was the first product introduced by Preformed Line Products Company in 1947. It was invented by Thomas F. Peterson and developed by PLP for application as protective sheathing of conductors at support points. The Armor Rod, utilizing the "preformed idea", proved to be a worthy product. It is simple, inexpensive and easy-to-install, for use in both the transmission and distribution fields of application.

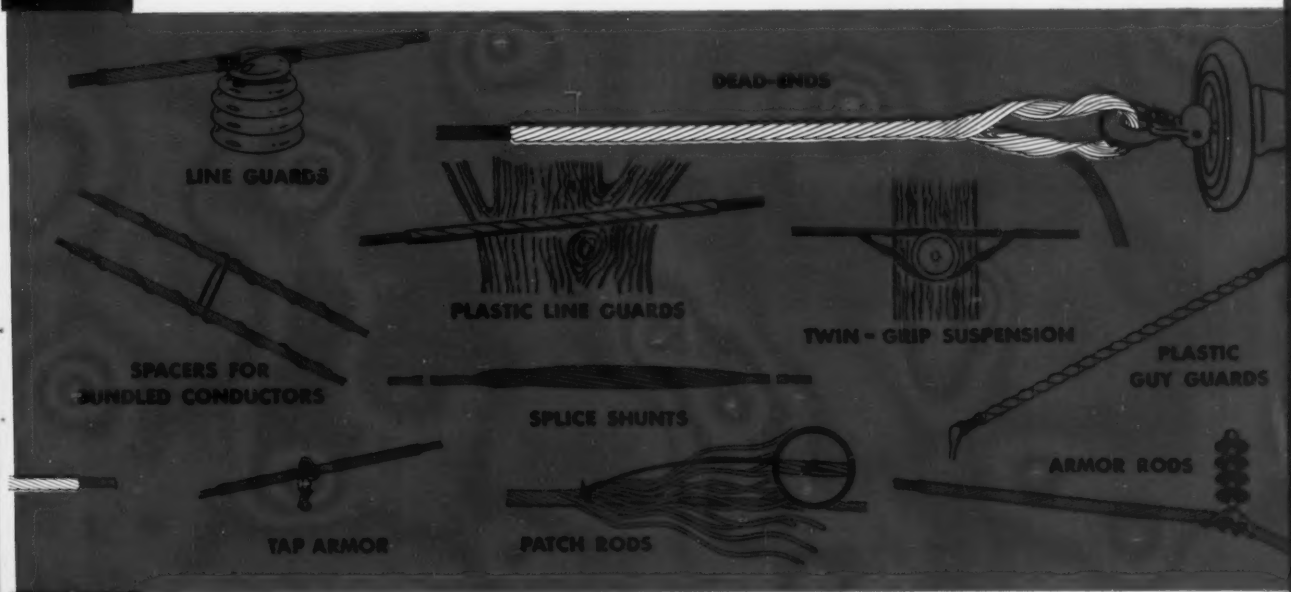
With acceptance came growth. Preformed Line Products Company steadily added to its staff, production capacity and facilities. From a modern up-to-date laboratory (where new and better products are constantly being sought) many new PLP Products sprang from the original "preformed idea". By keeping pace with the industry, the latest production techniques and quality controls were added.

Yet, one of the most important factors contributing to the Company's growth, has remained constant . . . *SERVICE TO THE INDUSTRY.*

Proof that GROWTH and SERVICE have always gone hand in hand at PLP is attested by the thousands of successful installations that have spread to all parts of the country.

Now, with the addition of a new plant in Palo Alto, California, and a second plant in Cleveland, Preformed Line Products Company has taken two more important steps to assure even greater service to the Industry it serves.

For further information on Preformed Products, write or call Preformed Line Products Company, Cleveland, Ohio: EXpress 1-3571.



Made in accordance with or for use under one or more of the following U. S. Patents: 2,722,393; 2,275,019; 2,587,521; 2,609,653; 2,691,865; other patents pending.

PREFORMED LINE PRODUCTS CO.

5349 St. Clair Ave. • Cleveland 3, Ohio • Phone: EXpress 1-3571

Incombustible...

That's why TRANSITE® DUCTS confine burn-outs and protect adjacent cables

DESPITE modern precautions, the burn-out is still a potential hazard. Consequently, cables should be given the maximum fireproof protection that Transite Ducts provide.

Transite Ducts confine burn-outs, safeguard adjacent cables from damage and reduce the possibilities of panic and explosion because they are incombustible throughout. Made of nonflammable asbestos and cement, Transite Ducts will not burn, smoulder or generate smoke or fumes. They cannot contribute to the formation of explosive gases.

Nowhere is the fireproof protection of Transite Ducts so necessary as in such vital locations as subways, tunnels and power plants.

As the panel below shows, incombustibility is only one of the advantages of Transite Ducts. For more information, write Johns-Manville, Box 60, New York 16, N. Y.

4 OTHER REASONS WHY TRANSITE DUCTS DO A BETTER JOB AT LESS COST:

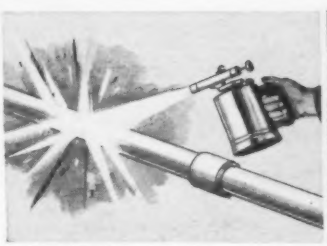
1. Corrosion-Resistant. Transite, being made of inorganic asbestos and cement, resists corrosion and is immune to electrolysis.

2. Permanently Smooth Bore. Transite makes long cable pulls easy. Danger of damage to cables is also minimized.

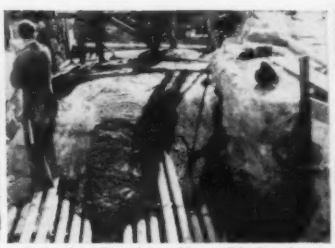
3. Easy To Install. Transite Ducts are light weight, easy to handle. Joints are quickly made. And long 10-ft. lengths reduce the number of joints in line.

4. High Thermal Conductivity. Cables run cooler in Transite, reducing I^2R losses, increasing current capacity and prolonging insulation life.

In Subways, where passenger safety is paramount, fireproof Transite Ducts will, in the event of a burn-out, confine it and reduce the hazard of panic.



Transite Does Not Burn, smoke or fume because its ingredients, asbestos and cement, will not support combustion. It cannot contribute to the formation of explosive gases.



Transite Provides Heat Dissipation, Too. In addition to providing fireproof construction, Transite Ducts permit cables to run cooler, reducing I^2R losses.

Photograph courtesy of Triborough Bridge and Tunnel.

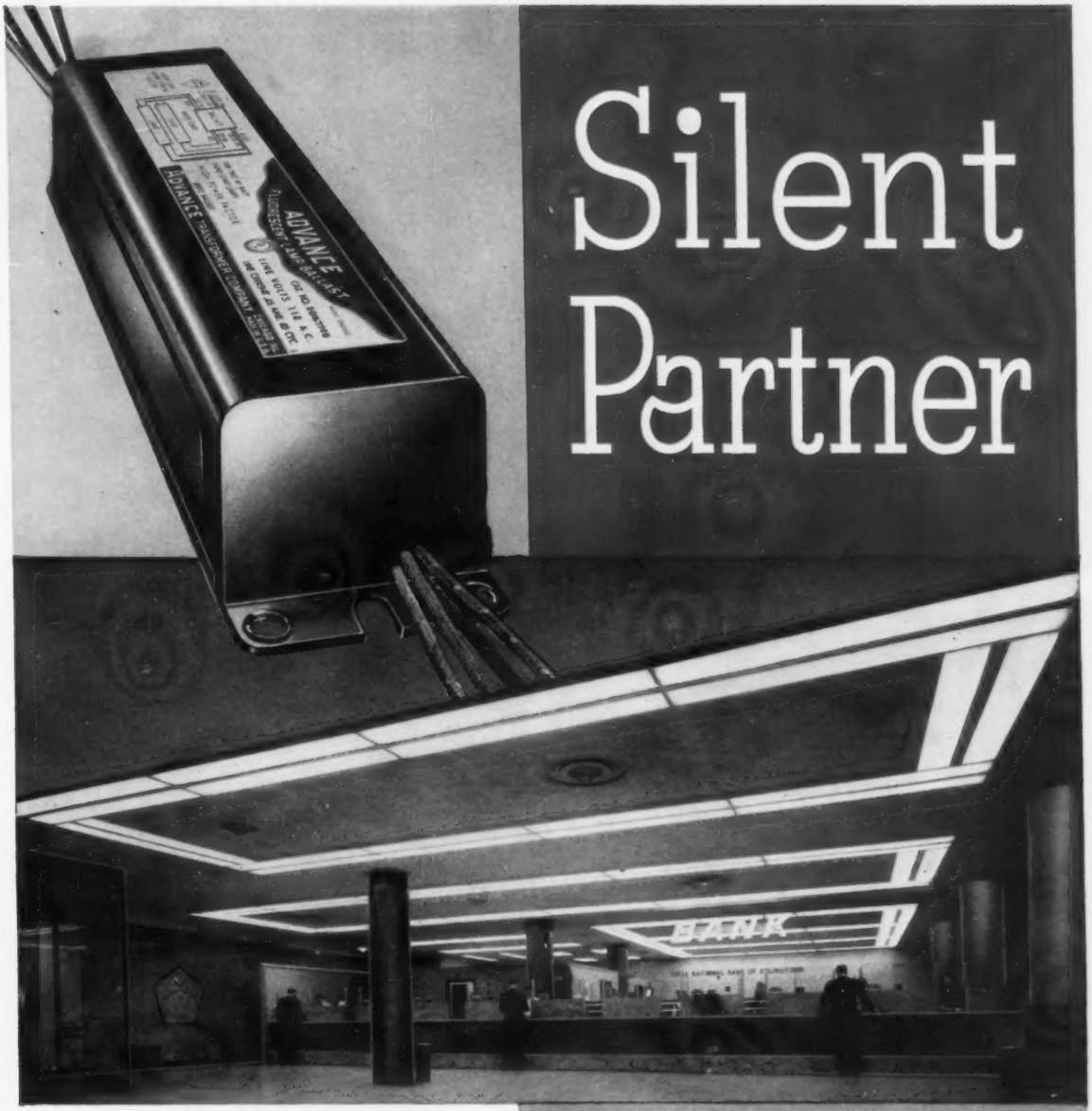
In Vehicular Tunnels, if a burn-out should occur, Transite Ducts limit damage, permit speedier repair and an earlier re-opening for traffic.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE DUCTS

TRANSITE KORDUCT—for installation in concrete

TRANSITE CONDUIT—for exposed work and installation underground without a concrete encasement



Silent Partner

Fluorescent lighting equipment manufacturers know the performance of their product is judged by the dependability of its silent partner . . . the fluorescent lamp ballast. That's why ADVANCE is preferred by leading manufacturers like Lighting Products, Inc. of Highland Park, Illinois, who chose ADVANCE ballasts for their new "Thin-Lite" luminaire, shown in the above installation. The performance and dependability which ADVANCE fluorescent lamp ballasts provide have made ADVANCE the world's largest exclusive ballast manufacturer.

Whether you manufacture, specify, install, use or maintain fluorescent lighting, your job will be easier if you make ADVANCE fluorescent lamp ballasts your silent partner.

The Heart of the Lighting Industry

First National Bank of Arlington, Virginia (Branch). Lighting installation supervised by Earl C. Douglass, Chief Electrician, Pentagon Bldg., Washington, D. C.

ADVANCE

CBM CERTIFIED by ETL

World's Largest Exclusive Manufacturer of Fluorescent Lamp Ballasts

TRANSFORMER CO.

2950 No. Western Ave. Chicago 18, Illinois

Let the ADVANCE nationwide network of service-stocking distributors be your partner too, in your ballast service needs. Write for complete details and name of distributor nearest you.

TYPICAL OPERATIONAL CHARACTERISTIC CURVE FOR THE "CORDON" CIRCUIT BREAKER

HOW IT WORKS: Combining and coordinating standard circuit breaker characteristics with specially designed current limiting Amp-traps, the "Cordon" circuit breaker achieves the characteristics shown above.

The thermal-magnetic overcurrent devices provide coordinated protection against overloads and short circuits up to a predetermined value (crossover point). At this point the current limiting Amp-traps assume the fault-clearing duty and extend short circuit protection to 100,000 rms amperes.

Unless the magnitude of a short circuit reaches the crossover point, the Amp-traps are unaffected, and the standard circuit breaker overcurrent devices perform their normal function. Since the fast clearing time of the Amp-trap (less than ½ cycle) provides current limiting, the magnetic and thermal stresses, which are proportional to the square of the current, are greatly reduced. Consequently, the standard molded case type circuit breaker safely withstands the heavy fault current. It is unnecessary to design bus-supporting members or current-carrying parts to meet the maximum peak current.

The Amp-traps are mounted in a molded housing which plugs into the load side of the breaker, forming one compact unit. A design feature of the "Cordon" circuit breaker actuates a common tripper bar when any Amp-trap blows, opening all poles of the circuit breaker. Until the blown Amp-trap is replaced the circuit breaker cannot be closed. A mechanical linkage arrangement automatically opens the circuit breaker before the Amp-trap housing is removed.

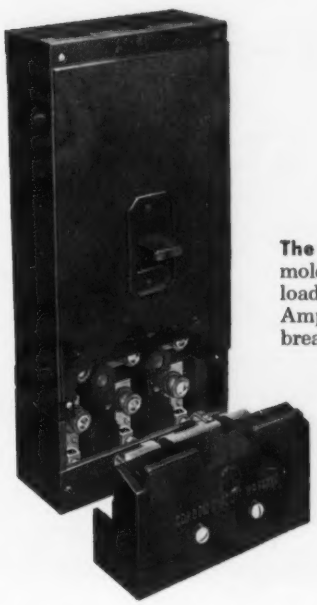
New I-T-E "CORDON" Circuit Breaker

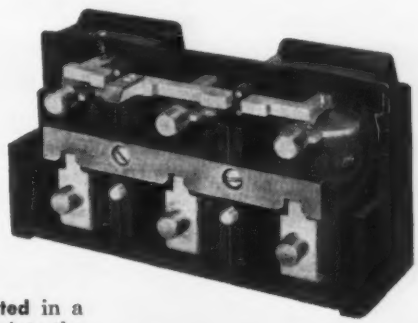
100,000 amp interrupting rating in molded case circuit breakers

Now—one compact circuit breaker provides the practical, economical solution to meet constantly increasing interrupting requirements. The new "Cordon" circuit breaker provides all of the design and operating advantages of the famed I-T-E molded case breaker, plus interrupting ability up to 100,000 rms amperes.

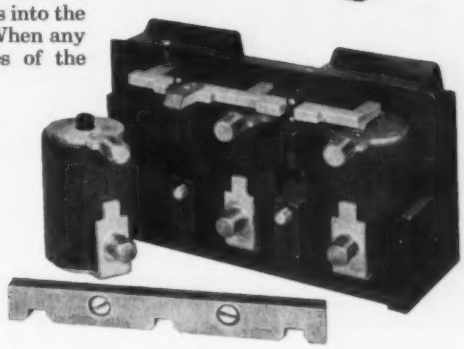
The "Cordon" circuit breaker can be utilized in normal branch and feeder circuit applications in switchboards, panelboards, load centers, and individual enclosures. Plug-in mounting, rear connected studs, or front connected terminal mounting arrangements are optional.

"Cordon" circuit breakers are available with 2 or 3-pole construction in 100, 225, 400 and 600 ampere frame sizes, 250 v d-c and 600 v a-c. Write for complete details or call your nearest I-T-E office. I-T-E Circuit Breaker Company, Small Air Circuit Breaker Division, 19th & Hamilton Sts., Phila. 30, Pa.





The Amp-traps are mounted in a molded housing which plugs into the load side of the breaker. When any Amp-trap blows, all poles of the breaker are opened.



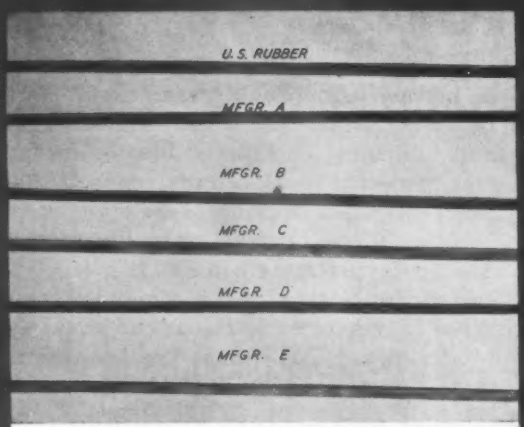
Draw-out design feature of Amp-trap housing provides accessibility to simplify change of Amp-trap. Amp-trap stud design assures proper alignment and positive connection when inserted in the breaker frame.

To replace a blown Amp-trap (indicated by released plunger), simply loosen two screws, remove the retaining bar, withdraw the blown unit, insert the new one, and replace the retaining bar.

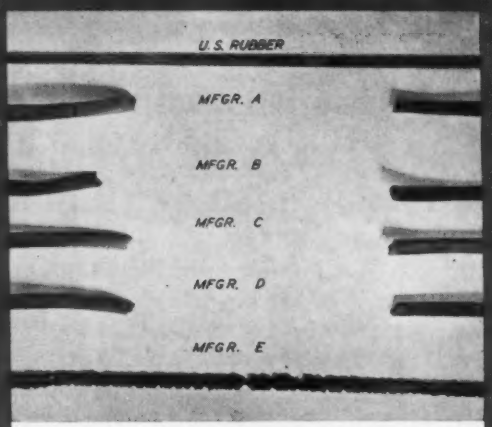
I-T-E CIRCUIT BREAKER COMPANY

Small Air Circuit Breaker Division

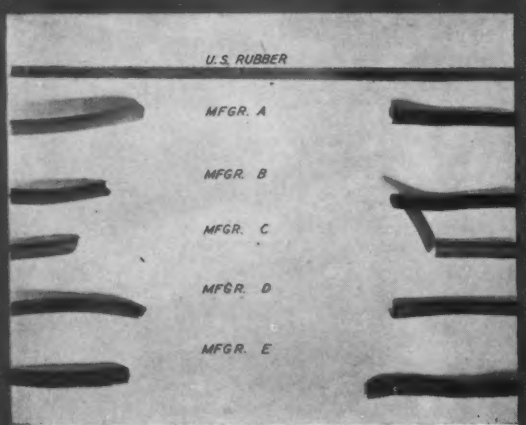
US RUBBER Grizzly High Voltage Power Cables



Here are 6 samples of widely used competitive neoprene jackets (stretched 200% of original length) at start of test for ozone resistance.



2 hours, 23 minutes after start. Brand "E" is disintegrating. Brand "B" has failed 13 minutes ago; the other brands failed an hour or more before.



Taken 7 hours after start of test—Brand "E" failed after 2 hours, 30 minutes. U. S. Grizzly Power Cable's jacket showed practically no sign of damage. It did not fail until after 18 hours of exposure.

Proved far and away the winner in an Ozone test of 6 leading competitive jackets!

U. S. Grizzly® High Voltage Power Cables are unmatched in performance, durability and all-around economy. Order these superior cables from your "U. S." branch, distributor or write Electrical Wire & Cable Department, United States Rubber Company, Rockefeller Center, New York 20, N. Y.

Obsolete wiring can cause power failure, step up expense and push down your production. That's why it's important to make sure your plant is equipped with Adequate Wiring—adequate not only for today's needs but also for the increased electrical loads needed in your future growth.

US RUBBER Electrical Wire & Cable Department

United States Rubber

ELECTRICAL WEST SALES GUIDE © JUNE 1956

News Letter

FOR THE ELECTRICAL MERCHANT OF THE WEST

The same—only more

Heralded by outdoor billboards and buttressed by a big publicity campaign stressing "low cost" and "new fuel," natural gas is only a step away in the Northwest. Mid the fanfare, even electric men have to remind themselves occasionally that what's coming is more of the same old gas, not a "miracle" fuel. Many of them cheerfully admit, however, that in the other fellow's shoes they would make the same capital of it. While the electric industry is disposed to "take a good look at itself," most of its members are pretty sure they can hold their own. As one distributor put it, "After all, they can't make a gastronic range!"

A natural subject

Delegates to NELPA's Business Development conference in Seattle last month did not need billboards to remind them of natural gas. The subject was on the program ("Is Gas Our Real Competition?" was one of the topics) and sometimes the subject just came up naturally. Those attending the meeting weren't worried but they showed a healthy concern and a determination to go out and sell—to keep what they have and get more. The report of this hard-working, sound-thinking conference is on p 128.

Will it be direct?

At least one spokesman in the Northwest believes that the utilities are going to have to get back into merchandising to protect their business. Gas men are ringing doorbells, paying dealer commissions where they interfere with their sales, he pointed out. It isn't in the cards, he insists, that a combination dealer will go out of his way to switch the prospect who is already sold.

Tentative

Just what gas rates will run has been in everybody's mind. Here's a tentative schedule for domestic use in the Spokane area: General service (heating, cooking, etc., but not available to all types of customers) first three therms or less per month $2, next 17 therms 12½c per therm, over 20 therms 9c per therm; small-volume service (not available to new customers after Dec. 31) first therm or less per month $1, next four therms 50c, over five therms 20c per therm. Contract service for commercial and small industrial customers starts at 66c per therm for the first three therms; for large industrial customers at 66 7/10c.

No grass grows

Northwest utilities aren't letting any grass grow under their feet. They are getting behind national campaigns, such as Housepower and Live Better . . . *Electrically*, coordinating them at the local level, point of success or failure. They are thinking of ways to help the dealer, the contractor, the builder. They are trying to help the customer in planning and financing. Some of them believe in subsidies, some don't. Some like contests, others think the public is tired of them. But all are carrying on some type of educational, promotional and cooperative campaign.

They're cooking

Washington Water Power's four-month commercial cooking campaign was running 140% of quota in mid-May. The company is promoting electric water heaters at the same time. For about four years it has been working to get old equipment out of commercial establishments and new modern units in. Saturation of all-electric commercial cooking is better than 85% for the entire system; goes as high as 95% in some divisions. The campaign aims to keep that and add some. After all, you don't throw out good equipment, even to switch to a "miracle fuel."

Yes, it's automatic

Automatic washers are out in front in Phoenix. A recent survey showed that 46% of the families own automatic washers and 36% wringer machines. Nearly twice as many people have automatic dishwashers as reported them a year ago. Gas ranges lead with 83%.

Because it believes subsidies are bad business, WWP is trying to break the wiring bottleneck by finding ways to reduce costs. At the NELPA conference Gordon DeFoe told about Miracle cable, a 115-amp entrance cable. More than 1,200 of these entrances have been installed in the Spokane area, with over-all price as low as $57.85. The cable being used in Spokane is Anaconda's but other manufacturers make a similar product.

A real miracle

Pacific Power & Light is now financing home wiring. Similar to other utility financing plans in contract provisions (maximum $350, three years to pay, as little as $3 a month), PP&L's "Time-To-Rewire" plan has something new. Permanent lighting fixtures may be included in the contract. So may quick recovery water heaters but that has been done before. Neither item may be financed without the wiring.

Lighting fixtures too

Washington Water Power has just started appliance repair financing. New range units, for instance, are needed in a lot of homes but service men have to have their money immediately. The utility will take care of this, let the customer pay as little as $3 a month. Maybe he will find it worthwhile to have all needed appliance repairs done at the same time.

And repairs

Portland General Electric made a pilot installation to start its promotion of "a sunshine room in your home." The demonstrator was a basement recreation room in a house called Sunlighter in a subdivision known as Sunbow Valley. Chester Jarrett of PGE handled the engineering of a complete saturation lamp system that delivers 2,000 E-Vitons per square foot. Grace Schoeni, the company's home lighting advisor, coordinated color and lighting throughout the house.

Sunshine room

Puget Sound Power & Light will have an auditorium and demonstration kitchen in its new quarters now under construction at Bellevue. The sales department will move from the Electric Bldg. about December.

New home

To push electric ranges and water heaters, Tacoma City Light for a limited time will pay up to $50 toward the cost of installing new services. This includes $20 for replacement of a fuel-type or old side-arm water heater with an automatic electric unit and $20 toward installing the wiring for ranges that replace fuel-burning equipment.

Cash help

An appliance battle that includes price slashing, easier financing, more advertising, more merchandising schemes is predicted by the *Wall Street Journal.* It is being brought on by mounting inventories, falling sales, mergers and a few withdrawals. The paper quotes one manufacturer of major appliances, who called it "murder," said he couldn't remember when the fight for business had been as vicious. Another was quoted as saying that he didn't think all would survive; a third that "there definitely will be a reduction in the number of manufacturers in the appliance industry." G-E (dubbed the toughest competitor) is offering to finance for consumers the cost of remodeling kitchens and laundry areas as well as the appliances. Westinghouse will let them add up the digits in their social security numbers and apply the total against any of its appliances; will also give an allowance on a dishpan for a new dishwasher. Norge will give the kids a circus tent if the parents will buy an appliance; Amana has a pair of prop glasses for those who visit one of its dealers during June or July. These are just a few of the offers. Appliance men profess to see an alarming similarity between what is happening in the industry and developments in the automobile business, the paper says, with the big ones going after volume at the sacrifice of profit.

It's murder, they say

The "Kitchen Salon" is a new concept of retailing packaged kitchens that has been originated by William Gilbert and George Ryan and located in the Beverly Hilton Hotel building, Beverly Hills, Calif. The "sales floor" is comprised of four complete kitchens. Shoppers come in and choose the plan they like, colors, etc., and the units are sold as a package. The "package" in this case is not merely appliances, but includes the entire installed and decorated kitchen. Backing up the idea is General Electric's new financing plan whereby the complete remodeling of a kitchen can be financed for a period of five years.

Call it a salon

June introduction of Hotpoint TV receivers has caused early renewal of distributor franchises with Graybar Electric Co., which already handles the kitchen and laundry appliances through 35 houses in 17 states. Franchises with other distributors are also being negotiated.

Franchises

An all-channel (UHF/VHF) version of the 17-in. table model has been added to Hoffman Electronics Corp.'s line of TV receivers. — **Added**

The "Vista Floor" will be a spectacular addition to San Francisco's Western Merchandise Mart. About $750,000 dollars are going to be spent on the building to add this 10th floor and install four new automatic elevators. Mart Associates headed by Marvin Kratter are new leaseholders of the building. The Vista Floor will have full view windows and an impressive view of the Bay Area panorama. — **It is a Vista**

If you can't lick 'em, join 'em. Maytag District Store at Cheyenne gave customers a free jalopie with each 12-cu-ft freezer purchased, and a cooperating car dealer offered $350 for the old cars back in trade on new ones. Result was that more freezers were sold in four days than in any four-week period in the past several years. — **For free**

New York's Better Business Bureau is warning the room air conditioner industry against advertising 7½-amp, ¾-hp conditioners as units that "just plug in." They cannot be advertised as units that attain "full efficiency on regular house current." — **BBB warning**

Fly-by-night TV service shops in the Denver area have been discouraged by formation of the Electronics Technicians Assn., a division of the Better Business Bureau. Since its inception a year ago, servicing complaints have been reduced 50%; there is a notable decrease in the number of "fly-by-nighters" hanging up their shingles. Harold Stein was recently elected president of the group. — **Works in Denver**

Hawaii distribution of RCA Whirlpool freezers, air conditioners and Estate ranges is now by Electrical Distributors Ltd., Honolulu, headed up by F. K. Grider. The firm continues with the laundry equipment line. — **Takes line**

Construction of a million-dollar warehouse and office building is underway by the Frank Edwards Co., independent distributor. Located in Burlingame, Calif., the new building will be ready for use in October. An auditorium with seating capacity for 1,000 will be an outstanding feature. Warehouse space is to be 60,000-75,000 sq ft, and offices will take up another 9,000 sq ft. Frank Edwards has recently taken on the Speed Queen and Ben Hur lines. — **Warehouse going up**

Silver anniversary of Wosk's Ltd., Vancouver, B. C., is being acknowledged with various store expansions and improvements. Ben and Morris Wosk started 25 years ago with a small range store, now operate seven major appliance and furniture stores in greater Vancouver and New Westminster. — **Silver jubilee**

Sixth store of Electrical Appliance Service Corp. has been opened in San Bernardino, Calif. Another is nearing completion at Anaheim, and a third is in the planning stage for the San Fernando Valley. — **Now it's six**

Hotpoint's new Electronic Cooking Center is being shown in the West. Graybar at Seattle had it in time to show out-of-town visitors during the NELPA conference. This was the first Northwest showing and at such times as the regular demonstrator was out, Leo Schroder and Bob Lloyd proved they could cook without heat. The Hotpoint electronic range has a companion oven for broiling steaks and baking pastry (also for browning with the Calrod units after cooking with radiation). The two are expected to be priced competitively with other makes having only the electronic unit; may even be less expensive. — **Has it both ways**

Peerless Corp.'s Broil-Quik is to be marketed by R-K-B Associates. Distribution will be through independent distributors. — **Will market**

Closed-circuit TV was used again in May to introduce a new product. This time, Philco used the medium to introduce its new line—automatic laundry equipment. Arlene Francis of the television "Home" show and "What's My Line" starred in the program, which launched an advertising campaign reported to have a budget of $2,750,000. Big talking point of the washers is "Ball Point Balance," a new suspension system. — **Closed circuit**

Philco is tying up with the 3,000 Firestone dealers. Radio and TV sets will be taken on this month with white goods due to start in January. — **Tie-in**

New pair

More home laundry developments are announced by Speed Queen, whose new Heavy-Duty Royal Pair, matching washer and dryer, is available. Trim and design economies are effected to bring cost down.

Don't stoop

June-July selling of Westinghouse refrigeration equipment is being spearheaded by promotion of a Stoop-Saver model with refrigerator section on top and freezer below, and a two-door model featuring completely automatic defrosting.

It's portable

Portable steam heat in the form of a steam radiator heated by a new stainless steel Calrod-type unit is being offered by Electric Steam Radiator Corp. Plugs in to standard household outlets and has thermostat.

Getting ready

With only about 70,000 color TV sets in use now, expectations for a rapid increase in the number are illustrated by Sylvania's recent announcement of production of a replacement picture tube.

You do it

Do-it-yourself has turned up in the form of a Crosley-Bendix kitchen kit that is supposed to help the buyer save on installation costs. The kits were in the hands of dealers the week of May 21. A guide for installation can be sold or given away by the dealer. It is needed because "naturally, plumbing and electrical installation may cause some concern to homeowners not talented along these lines."

Changes

Denver distributor of General Electric TV sets, as of July 1, is B. K. Sweeney Co. Plans are to drop the DuMont line. The company is also getting other G-E products.

New faces

Westinghouse Supply at Portland has made some personnel changes in its Consumer Products Division. Harold W. Partlow (who has been with Westinghouse for nine years; before that was with Bonneville and Tacoma City Light) is now sales manager for consumer products. Kenneth B. Miller has been transferred from Los Angeles as sales manager for radio, TV and specialties. Before moving to California, Miller was in Chicago for 14 years, a part of that time with Motorola.

On panel

Ray Jones, Denver, was on the panel to discuss service methods and education at the recent Appliance Parts Jobbers Assn. annual convention in St. Louis. He reported on the progress of the services courses conducted at Denver's Opportunity school, now covering 15 makes of washers. They are in process of working a course on dryer repairs to be put on this fall. Last year the association held its convention in Denver.

Reps

Western representation for Chico portable evaporative air conditioning units is now by Roy J. O'Donnell Co., Denver, in Colorado, New Mexico, Arizona, Utah, Wyoming, Montana, southern Idaho, eastern Nevada and El Paso, Tex.; in northern California G. K. Laumer, San Francisco.

Takes over

Admiral Corp. has acquired the TV and radio manufacturing division of Raytheon Mfg. Co. It will be operated as the Belmont Division, with plants in Chicago.

Another

Ben Gross Corp. has purchased the TV, high-fidelity phonograph and radio business of Capehart-Farnsworth Co., a division of International Telephone & Telegraph Corp.

About people

Names in sales news include Thomas B. Kalbus, one-time Southern California district sales promotion manager for Westinghouse Electric Supply, who is now general sales manager of the TV-radio division . . . Lucille Melovidoff, director of Tacoma City Light's home service department, who is now chairman of the Electrical Women's Round Table, Seattle-Tacoma Chapter . . . William H. Cormier, new general sales manager for CBS-Columbia of Southern California . . . O'Farrell Welch, appointed general manager of the Hoffman Sales division of San Francisco . . . K. Warren Snider, former regional sales manager for Motorola in California and Seattle, who is now radio-phonograph product manager for the company . . . William Golby, elected president of Olympic of Southern California Inc., Los Angeles factory distributing branch of Olympic Radio & TV Inc. . . . Edwin J. McCullough is new radio and TV specialties sales manager for Westinghouse Electric Supply at Seattle . . . Jerry Martin is appointed Salt Lake City area field service representative for Magnavox.

SAN DIEGO IN THE LATE 1880's

Fifth and Broadway, San Diego, looking west to the bay about 75-years ago. The building with the real estate sign, W. H. Holabird & Co., is now the site of a portion of the Walker-Scott store. The building at the right, known as the old McKie Building, is now the site of the First National Trust and Savings Bank Building. Note the tall carbon-arc light mast on the left in the distance . . . the method then used for lighting the city.

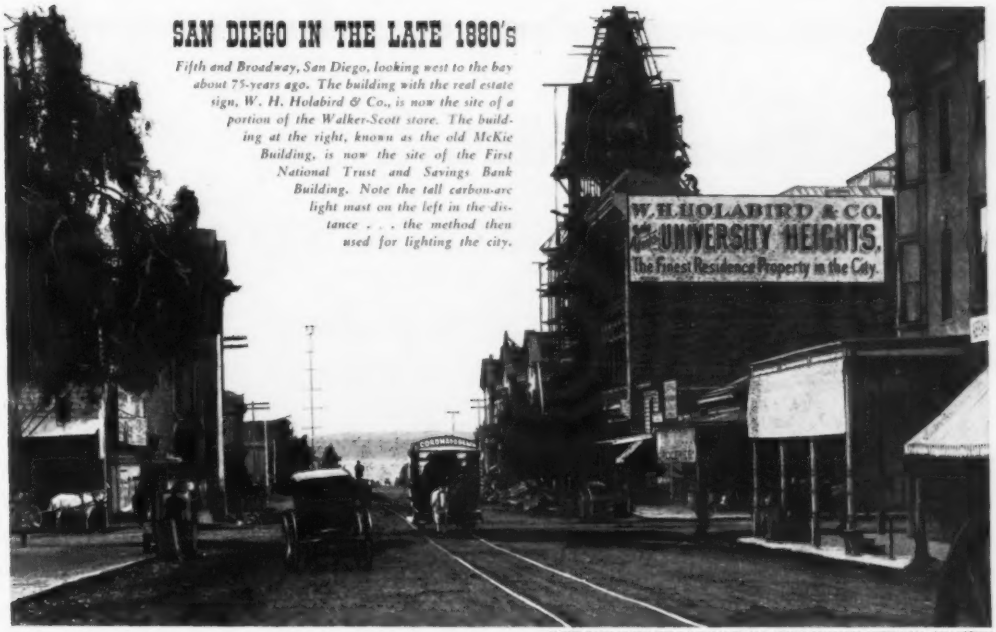


PHOTO FROM UNION TITLE INSURANCE AND TRUST COMPANY HISTORICAL COLLECTION

75 Years of Community Service...

Seventy-five years ago Broadway was a rutted dirt street, over which horse-drawn buckboards and carriages rattled and rumbled. The little Coronado trailer car, hauled by a team of horses, jogged down to the ferry at the edge of the bay. Those were truly the horse-and-buggy days.

Most of San Diego's homes were lighted with coal oil lamps. Coal and wood were in general use for heating and cooking. This was San Diego on April 18th, 1881, when a small group of citizens organized the San Diego Gas Company. Six years later, in 1887, the Gas Company re-incorporated under the name San Diego Gas & Electric Light Company, and began to provide electric service to the city.

The capacity of the orginal gas plant in 1881 was 25,000 cubic feet per day, as compared to today's supply line capacity of 137 million cubic feet per day. The first electric plant had a capacity of about 60 kilowatts, whereas our generating capability today is 460,000 kilowatts.

Beginning in 1881 with plant and equipment costing $30,000, the Company has grown with the community and now has an investment of approximately $190,000,000 in property, plant and equipment.

Yes, gas and electric service has progressed remarkably in its first 75 years in San Diego — from a small lighting business to a great service reaching into practically all of San Diego's thousands of homes, farms and industries.

Credit for this accomplishment is shared by many people. Since the very beginning, customer interest and the friendly spirit of community cooperation has made the growth of our service possible Through the years, customer faith in our recommendations for the use of new appliances provided us with the necessary stimulus to increase our generating facilities and expand our distribution system. In turn, this public trust resulted in the confidence of the investor in the San Diego Gas & Electric Company. Today among our 26,674 stockholders, all walks of life are represented—"the butcher, the baker, the candlestick maker"—and without their confidence in our business, San Diego Gas & Electric Company could not fulfill its obligation to grow with the communities it serves.

On this occasion of our 75th anniversary, we re-dedicate ourselves to our obligations as a utility, and to our responsibilities as a partner in the progress of the communities of our service area.

E. D. Sherman
President

SEVENTY FIVE YEARS OF COMMUNITY SERVICE
1881
75TH ANNIVERSARY
1956
SAN DIEGO GAS & ELECTRIC COMPANY

SAN DIEGO GAS & ELECTRIC COMPANY

INVESTOR-OWNED AND LOCALLY MANAGED

ELECTRIC BUILDING • 861 SIXTH AVENUE • SAN DIEGO, CALIFORNIA

ELECTRA'S HUSBAND

"On Equal Rights"

"Did you say the electricians are going to get another pay raise in July?" asked Electra incredulously.

"Yep, you heard it right."

"What are they trying to do, kill off us homeowners' inclination to try to have them give us more of this *Housepower* we all need and are just waking up to? If we were reluctant to have the house all torn up at the awful prices they charge for an electrician, what good will it do to advertise and urge us to modernize if the price is going even higher? Aren't the boys sort of losing their heads over this prosperity right now?"

"Can't tell them a thing," was my retort. "The contractors who have been collective bargaining with them say they just won't listen to reason at all. Because there is so much work available they just issue demands. 'Bargaining' is a nice sounding name for what in some cases is really bullying pigheadedness or even blackmailing. You ought to see some of the demands they made this year. They already had forced pensions, vacations, health and welfare, and payment to drive to and from work from the union hall, even if they live across the street from the job.

"Hard put to think up any new fringes this year, they demanded more health and welfare, more insurance on their personal tools, more travel pay, free parking, coffee breaks and, get this, that the contractor would have to letter the name of his company on the side of his truck."

"What on earth for?" asked Electra.

"So that the poor guy could not slip in a little work himself if the job was running behind, without being caught at it and fined."

"And don't the employers ever ask for anything in all this 'bargaining' ? " asked Electra. "Who is running the business anyhow?"

"Well now, that is really a question."

"Any man with any self-respect surely would put up some kind of a counter demand, wouldn't he?"

"Once upon a time contractors were a rough and tough lot and would put up a fight. But not any more. They just say, 'Okay, Okay,' give the union what it demands, and then sharpen their pencils some more to try and keep in business without having the customers going on strike against high prices."

"Oh I can't believe all of them do," said Electra, naming a couple of friends in the business as examples.

"Men like the ones you name have just about given up. They are outnumbered at the meetings and seldom ever come any more. One of them, for two years now, has presented the negotiating committee for the contractors with some counter demands. They make as much sense as the ones the union makes."

"What were they? " asked Electra.

"As I recalled them, they went something like this:

"1. That the union guarantee to furnish competent workmen, capable of performing the electrical work without complaint from the inspection department. (It is already in the agreement that an electrician will make good on his own time for mistakes he makes, but none ever does.)

"2. No member of the union will talk or act in a way to degrade a present or former member.

"3. The union shall provide insurance comparable to the Workmen's Compensation Insurance Fund for employers, with costs borne by the union, including administrative costs.

"4. Time spent by a union member in discussions on the job with the business agent will be deducted from his pay.

"5. All members of the union will identify their cars by a uniform sticker or sign with letters not less than 4 in. in size. (That's so a union member won't sneak in a job on the side over the week end for someone who wants to avoid paying a contractor.)

"6. Employees will notify the employer of intention to quit at least one hour prior to doing so.

"7. Union members shall be responsible for the employers' tools. Tools lost or broken (or purloined, he might have added) by the employee shall be replaced at the expense of the employee or the union and be of equal quality.

"8. The union shall collect from each member a sum equal to 2% of his wages, prior to deductions, to be held as a vacation fund for the employers."

"Nothing unreasonable about that," said Electra. "What happened to these demands?"

"They were never even submitted to the union committee. Too scared it might irritate them."

"Do you really mean," asked Electra, "that the bargaining committee for the contractors didn't dare ask for anything for their side. I can't believe it."

"They tell me that at one of the meetings the committee reports in as to the union's demands. Then everyone lets go with all his pent-up steam against these unreasonable demands, including the committee. There'll be a vote and the demands are turned down. Then the committee reverses itself and makes a strong plea in favor of giving the union what it asks so as to keep good relations and to prevent reprisals against the committee members or the contractors themselves——"

"What kind of reprisals?"

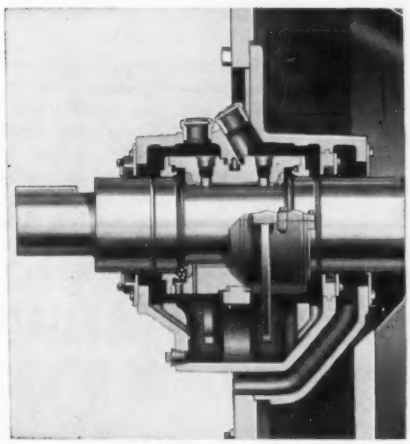
"Slow work, wasted materials, beefing over trifles, anything to make it cost the contractor more on a job he has guaranteed to do for too little anyway in his competitive bidding. There are lots of ways they can really hurt a contractor—and often do."

"Well, again I ask, 'Who is running the business anyway?' And if it is the union that is running the business, then it had better treat its employees—the owners of these businesses, if you can call them such—better than they are doing. How about a 40-hour week for them, so they won't be working nights and week ends like our friends do, estimating and bidding for work for the union men to do? What about health and welfare and paid vacations for them too, and what about pay for their work that is at least equal to that of a journeyman? Equal rights for contractors, I say!" declaimed Electra, all fired up with the injustice of the situation.

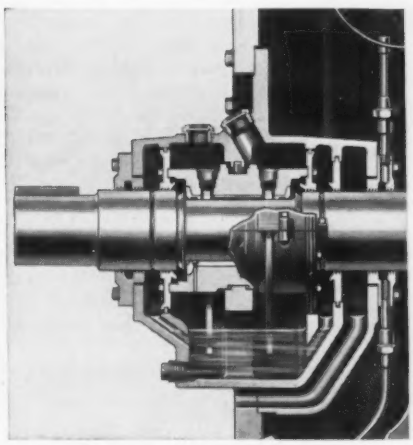
"All I've got to say is the unions better watch out. If the women start campaigning for equal rights for contractors they will be up against some real bargaining."

NEW Bearing Design Means Better Motor Performance

Allis-Chalmers capsule-type sleeve bearings now perfected for complete motor line



Standard capsule-type sleeve bearing

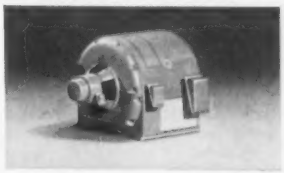


High speed capsule-type sleeve bearing

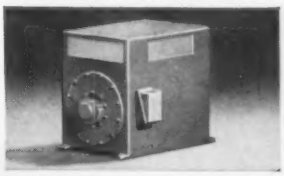
A new feature—an improved capsule-type bearing design—has been added to the Allis-Chalmers complete line of large end-shield bearing motors. This new bearing will give you better motor service, simplified maintenance and longer motor life through features like:

- Dust-tight, leakproof enclosure protects bearing from dirt, dust or abrasive materials.
- Venting system prevents oil leakage — keeps oil and vapor from getting into motor enclosure.
- Dual oil-rings insure bearing surface lubrication — either ring can adequately lubricate bearing.
- Split end-shield gives easy accessibility to winding and air gap — without disturbing capsule or bearing alignment.

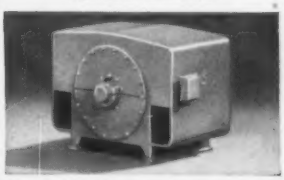
Drip-proof or splash-proof cage motor



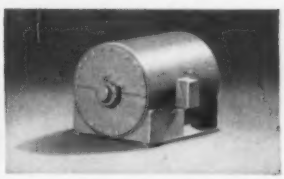
Synchronous or wound-rotor motor



High speed cage motor

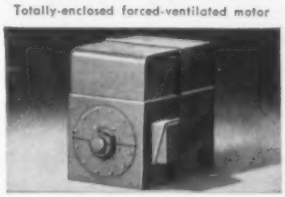


Weather-protected motor



Totally-enclosed fan-cooled motor

Totally-enclosed forced-ventilated motor



Water-cooled or inert-gas-filled motor

Capsule-type bearings are standard on these Allis-Chalmers motors.

You get MORE from Allis-Chalmers motors

More design and construction features — more application help. For complete information, contact your nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-5032

INCREASING HOME USE of big residential load builders such as those shown above is a major reason why . . .

UTILITIES WILL SPEND $15.5 billion in distribution equipment alone during the next 10 years. 120/240-volt secondaries appear adequate even though . . .

ARE TODAY'S SECONDARIES GEARED FOR '65's DOMESTIC LOAD OF 350 BILLION KWHR?

Near-tripling of load sparks new interest in 120/240 vs. 240/480 system voltage debate. Here's a report.

With home owners ready to buy $90 billion worth of new appliances by 1965, it's natural for utility men to wonder: can today's secondaries be expanded to meet this residential load growth? Or would it be more economical to scrap 120/240-volt systems for 240/480-volt equipment?

Substantial secondary system savings are available, as system designers know, when new systems are operated at doubled voltages. Transformer rating and spacing can be doubled, giving same percent voltage drop and loss. Transformer costs and losses per kva decrease as ratings increase.

However, a new G-E study demonstrates that these savings are offset by the extra cost of light and appliances at the higher voltages, leaving marginal savings, if any. It would not appear that consumers would accept such savings in view of annoyances and debatable hazards to life which go along with the 240/480-volt system.

Present estimates indicate domestic customers will number 54.1 million by '65, consuming 350.1 billion kwhrs annually. With this load, 120/240-volt, even with No. 2. copper or 1/0 aluminum conductors, has been found adequate.

Contributions of distribution engineers towards improving system economy has been a credit to the entire industry. Comparing results of this G-E study with actual system conditions can extend this progress. For your copy, write General Electric Co., Section 301-313, Schenectady 5, New York.

MORE POWER TO AMERICA

GENERAL ELECTRIC

THE AVERAGE HOME will use 6470 kwhr in '65 compared to an average of 2448 kwhr in 1954.

TREND TO LARGER distribution transformers, seen by N. Case, Sales Mgr. C. Sutton and L. Hamilton of the Distribution Transformer Dept., spotlights rise in domestic load per customer.

PF IMPROVEMENTS with G-E capacitors stand out with 120/240-v secondaries in southern areas, according to W. Hart, Power Capacitor Sales Mgr. and J. May, Marketing Mgr.

STRAIGHT LINE ACCURACY to 100 amperes fits G-E I-55 meter to rising load at both voltages as noted by H. Campbell, Distribution Engineering, B. Gravitt, Mgr.—Marketing, Meter Dept.

ELECTRICAL WEST

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Millions are being spent on consumer promotion . . . People are ready, willing and able to buy the industry's package of better living . . . Customer demand may have already outpaced the industry's ability to merchandise its products successfully . . . If so, it's time to take a look at ways to . . .

TOOL UP THE SALES MACHINERY

People generally follow the path of least resistance. That's as true in their spending habits as it is in any other phase of their activity. The question arises: "Is the electrical industry making it hard to buy its basic package—better living?" If so, millions of dollars are being diverted into other retail channels for autos, travel, furniture and other niceties of modern living.

Never before in history has the electrical industry spent more time, effort and dollars in whetting customer appetites for its products. Never before has it had as many products to sell. Never before has it had the awesome capacity it has to produce these products.

People want these products in quantity. The industry can turn them out in unlimited quantities. Somewhere in between the end of the production line and the home, various and sundry restrictions in the industry's distribution channels slow down the flow of goods to some fraction of the amount that would normally be expected from this happy combination of supply and demand.

Consumer experience indicates that it is difficult to buy what the industry proclaims it has to sell. For example, millions of dollars, tens of thousands of man-hours and billions of words have been expended to sell the benefits and satisfaction of better lighting. Mrs. Housewife will challenge you to go out and find the fixtures, lamps, valances, decorative garden lights and other items (so beautifully displayed in advertisements and brochures) at any of her normal retail shops. Light conditioning a home today is a major buying project involving dealing with carpenters, electricians, upholsterers and painters, to say nothing of tedious shopping around to pick up lamps that combine a good appearance with light emission.

In the average community, modernizing the kitchen is an equal or greater chore for the purchaser—even after making up her mind just what type of built-ins and other equipment she wants. Most general contractors haven't the time or inclination to touch such jobs. The customer must be her own general contractor and sublet the wiring, plumbing, carpentry work, painting and floor covering portions in addition to buying the equipment from one or more retail dealers. It's not easy and most times it's exasperating.

Future Marketing Climate

The appliance industry's biggest sale potential and biggest era lies in the immediate future. With the dynamic growth in the country's economy, there will be more and more customers with larger numbers of disposable income dollars. The phenomenon of the past decade has been the greatly increased numbers of families that have moved into the middle income brackets. This middle income group traditionally has been the main source of appliance sales. There will be more families, too. Within the next decade the huge baby crop of the World War II era will push up family formations and provide a whole new generation of customers with essentially zero saturation in appliances.

By TV, the shelter magazines, industry promotional campaigns like Live Better . . . *Electrically,* and other ways, the customer is now being exposed on every side to the possibilities and advantages of modern appliances. Certainly the climate for volume selling never has been better. But the selling machinery is by no means running at full efficiency.

A record volume of goods is being moved—but at distressing price competition. This situation is sufficiently severe to cause mortality in existing organizations and does not encourage the formation of new retail outlets which will be needed for future growth.

Unnecessary sharp price competition has made discounting an accepted practice within the industry and has led to shorter margins for both distributor and retailer. Shorter margins are particularly hard on the independent distributor who has long held an important place in appliance distribution.

Emphasis on price and volume has created a situation whereby appliance distribution is not attracting either the caliber or the number of people necessary for it to function efficiently. Many people hold that the lack of strong personalized selling at the retail level is seriously restricting the industry's sales volume. These same people hold that most of the products of the appliance industry have not yet advanced to the stage of public acceptance where chain store philosophies of "do-it-yourself" shopping can be applied.

The trend toward built-in appliances and the development of plug-in appliances which require separate plumbing and electrical circuits has created problems of installation that have only been partially solved to the customer's satisfaction. Appliance servicing, likewise, is an area where the

Westinghouse photo

WHO'S GOING TO SELL THEM? Looming on the horizon are radically different new products for the home like this luminescent panel that glows when subjected to a certain wave length. It opens up a whole new concept of room illumination

industry is still fumbling to make it either profitable for itself or satisfactory from the consumer's standpoint.

All of these things could very easily be passed off as part of the growing pains of the industry. The question is: "Is the industry making any more than half-hearted efforts to correct any or all of them?" The reduction or elimination of these deterring factors means the difference between just "getting by" and doing fabulously in the future.

To determine if efforts were being made in that direction. ELECTRICAL WEST sampled the opinion of 39 experienced merchandisers in the manufacturing, distribution and retail selling phases of the industry. The object was the determination of trends, if any, in the distribution pattern. The results, interesting but still somewhat inconclusive, are reported hereafter. The consensus is that changes in the distribution structure *are* under way, although the extent and ultimate shape are still somewhat vague.

Forward looking merchandising executives envisage the appliance market undergoing a transition that will segregate appliances into three more or less separate categories—the plug-ins, the built-ins and the electronic. Channels of distribution for each group will be distinct but overlapping. The merchandising of each of the groups will of necessity have separate problems which are likely to lead to greater specialization at the retail level than has been experienced in the past.

Plug-in devices, and this includes both small appliances and the larger units such as refrigerators, have achieved such a high degree of customer acceptance that they might be classed as staples in the industry. As staples their sales pattern will be subject to merchandising practices commonly found among staple items everywhere. They are produced in volume, have a broad consumer appeal and a wide market base. As such, they will continue to be handled by a variety of merchandising outlets and they will be subject to continuing price competition.

They will be subject to all of the factors that impinge on general merchandising operations such as forced sales, liquidations, tail-end discounts, and "deals" because they will appeal to the merchandising outlets that can operate on a small margin, fast turnover, lower overhead and little service.

The experts think that the discount house will still be with us for some time and that the current sales pattern for plug-in appliances will not change materially in the next few years.

Built-in appliances present a different picture. They, in turn, may be subdivided into three different categories—the new home built-in appliance, the remodeling built-ins and the do-it-yourself built-in.

The growth of tract developments has added a new dimension to appliance selling. The potential volume of business is large. That business is written in sizable orders and it is highly competitive. As such, this segment of the market is likely to be reserved for direct negotiation between the manufacturer and/or distributor and the general contractor. The fact that this portion of the business is sold in large increments, with competing fuel appliance products, will keep it as a special category of the manufacturer-distributor sales program. With the increasing trend toward built-in facilities, this segment will become of greater, rather than lesser, importance in the future.

Modernization Potential

It is in the area of home modernization where the real changes in the distribution pattern begin to emerge. This is the area of hope for both the independent distributor and the independent dealer who has been struggling to compete with the depressed price structure on plug-ins and that portion of the new home market represented by the small builder and individual owner. The potential market is represented by the 40,000,000 homes that were built prior to 1950. The key to the market is the successful selling of the room package, i.e., the modernized kitchen or laundry complete with wiring and lighting.

One executive, among several who mentioned this trend, summarized it very clearly:

"My observation is that our industry is now entering upon a new era of selling electric equipment which has great promise. To sell an electric kitchen as a package instead of selling individual appliances has great possibilities. Financing of this type of sale is comparatively easy through home improvement loans. This type of financing is appealing because it does not, in most cases, involve a down payment. Sometimes such improvements can be added

to the existing mortgage when such a mortgage is open-ended.

"A new kitchen representing an expenditure of $2,500 to $3,000 is, after all, about the same cost as a popularly priced automobile and can be financed easier than an automobile when the prospect has some equity in his property. The advantages of this type of merchandising are many, one of them being that a proposal to completely rebuild a kitchen is not subject to the same competitive price cutting tactics that are present when an individual piece of merchandise is sold.

"Some dealers who are now successful in the remodeling business state that they do not itemize the cost of each appliance or the labor wiring and materials involved in the job. They present a plan and a sketch showing the way the kitchen will look when it is completed, with one price to cover the entire job.

"The same techniques can probably be used successfully in relighting homes. As an industry I think we need to raise our sights and quote the completed job as one unit. Even when selling individual appliances the dealer would probably do more business if he always quoted an installed price."

Several executives think that the amateur craftsman, spurred on by success in smaller do-it-yourself projects, may become a factor in home modernization in the future. If this is true, it provides another avenue for the local appliance retailer to sell effectively. A California distributor sums this viewpoint up as follows:

"Being both prosperous and having more spare time, a great many home owners will be deep in their 'do-it-yourself' activities. As part of this we'll be solving the problem of kitchen remodeling, having electrical outlets in the proper place, and getting proper fixtures and lamps installed for the best decorative effect and practical use in their homes. In other words, the do-it-yourself program will develop until a great many home mechanics will be devoting their time and talents, either alone or in team with their friends and neighbors, toward making the American home more livable."

Hardware dealers have spark plugged the do-it-yourself program and, as a result, have become the supply center of the neighborhood as well as acting as consultants and advisors. They have even found a lucrative side line in renting specialized tools. The same technique might well be applied by the appliance dealer.

The emergence of electronics as a big factor in the home appliance market cannot help but have an effect on the future merchandising activities. A whole new array of appliances operating in the microwave regions is on the horizon. These include the electronic cooking and heating devices, the supersonic applications in dishwashing and laundry equipment, and the electroluminiscent light sources. And not to be overlooked, too, are the home applications of wired TV. Some of these newcomers may obsolete existing appliances but the promotion of all of them will require pioneering of a high order. As in the case of all new developments, prices and margins will have to be adequate to create a market and to encourage the distribution outlets who will sell them.

Completed Cycle?

In perspective, the experts see little opportunity for curing many of the so-called evils of present-day appliance merchandising. They are optimistic over the possibilities of coexistence because of the tremendous potential market yet to be developed and a conviction that most of the elements in the distribution structure today will adapt themselves to profitable over-all operations through their ingenuity and aggressiveness. The experts foresee a higher degree of specialization at the retail level.

In the early days of the electrical industry, electrical contracting and appliance selling were combined under the contractor-dealer. In the ensuing years this type of outlet became overshadowed by other merchandising methods. Now perhaps the time has come when selling and installation must be considered as an entity. If, as conditions seem to indicate, successful dealer operations lie in the home remodeling area, the dealer must be either competent to make an installation in the woodworking, plumbing and electrical field or must have ready access to the necessary craftsmen, such as carpenters, plumbers and electricans, who can complete his sales package for him. It would appear that, either through merger or affiliation, the electrical contractor and electrical dealer will come much closer together in the future.

Channels Will Change

The advent of electronic appliances in greater volume injects a new aspect into the retail picture. Will the exclusive TV and radio dealer inherit these new kitchen and laundry devices and come up against the problems of appliance merchandising, installation and servicing? Or will the progressive white goods dealer assume the responsibility for their sales and distribution and absorb a TV outlet for its technical know-how in this new field?

If there was any unanimity of opinion in the replies to this survey it was that the independent appliance dealer will have to change and adapt his operations to the desires and needs of the customer and the requirements of the new electrical servants that are either here or just around the corner. The small independent dealers who continue to try to compete in the fast-changing merchandising jungle of staple appliances will find that the road to prosperity is extremely rough.

The role of the distributor apparently is destined to change too. In the era that lies ahead, the functions now provided by the distributors will grow in importance. It is probable that they will have to accept shorter margins on the staple appliances and for servicing the new home builders and general contractors. On the other hand, theirs will be the responsibility for guiding and fostering the transition of dealer organizations to the new industry patterns. Theirs will be the responsibility for training installation and service people for the new electronic group of appliances. For these and other services that can be provided in no other way economically, the distributor can and should enjoy margins on the newer

"It is my opinion that human nature does not change. People still like to be sold. They like personal attention. They prefer to talk to well-informed salesmen. Therefore, more specialization is desirable . . . The problem is one of attracting people to the retail end of this business and properly training them."

—W. E. Cranston, president, Thermador Electrical Mfg. Co.

Frigidaire photo

WHO'S GOING TO INSTALL THEM? Supersonics, applied to such things as dishwashing, as shown here, may revolutionize the cleaning devices used in the home. It will be necessary to plan ahead for the sales-installation facilities that may be required

appliances that will be compensatory.

Unfortunately there is little evidence that the executives of the manufacturing principals see the future distribution pattern as clearly as those at the distributor-dealer and utility level. Manufacturing executives who were queried in connection with this discussion were almost unanimous in politely declining to comment. Such reticence could be interpreted in many ways including complacency, indifference, indecision or unwillingness. It can be presumed that the production lines of the appliance industry, collectively, will be operated to the capacity commensurate with the market's ability to absorb the last unit with the smallest increment of profit to the producer. It can be further presumed that far-sighted manufacturing executives are very conscious of the market development needs and potentials. The part and the price they will contribute to improve conditions is still a matter of conjecture.

Distributors, however, who have been thrown to the wolves by price conscious manufacturers, will find willing allies in the utility field. There are indications that power companies will devote increasing amounts of advertising and manpower to help both dealers and contractors develop residential and commercial load. On some systems these efforts have already been partly diverted to the fostering of stronger and better dealer outlets. They might well be extended to cover the training of sales, installation and servicing personnel.

Like the weather, the need for developing and training sales personnel in adequate numbers is being talked about by every segment of the industry. In reality, very little is being done in this direction. Also being realistic, there is such a squeeze on profit margins that there is little left over for investment in future development even if the dealer and distributor were so inclined. One rugged individualist suggested that the only way that a really organized sales training program could be developed would be to put it on a basis similar to the cooperative advertising funds which were instituted to encourage dealers to invest in market development. Everyone agrees that more aggressive personalized selling is essential if the appliance industry is to retain and improve its competitive position with other industries competing for the consumer dollar. The method of doing it is still in the conversational stage.

A Glimpse of 1965

It's easy to look back over the past decade and see the changes that have taken place in both the product and the way of selling it. A look ahead is much more difficult because, from the day-to-day vantage point, trends and changes are almost imperceptible. However, the past history of this industry indicates that all segments have demonstrated resourcefulness and aggressiveness to an unusual degree in meeting their problems. There is no reason to believe that these attributes will change in the future.

It would be interesting to take a look at a hypothetical report of a top-rank appliance merchandising executive in 1965. Such a report might read as follows:

"Despite some rather deplorable merchandising practices that exist in the market today, the past 10-year period from 1956 to 1965 has witnessed a truly remarkable growth and development of the home electrification field.

"It was at the beginning of this period that the industry rather belatedly recognized that a more unified approach to the sale of electrical merchandise was badly needed. This approach embodied a positive attack against the truly archaic home wiring systems which existed at that time and manifested itself in the concerted action to sell both wiring and appliances as an ensemble.

"The beginning of this new era was marked by the introduction of the Live Better... *Electrically* program which has been so successful in both creating customer desire and acceptance and in coordinating the efforts of all segments of the industry.

"In the early stages of this period, appliance manufacturing had not completely escaped from the growing pains of the expansion following World War II. The jockeying for competitive position, the rather crude methods for estimating month-to-month market potentials and the urge for sales volume at almost any price were all factors that had contributed to the development of discount houses, reduced profit margins and other effects which were of grave concern. It was a particularly difficult time for the smaller independent manufacturer and it led to the disappearance of certain brand names through mergers and consolidations.

"The outgrowth of this situation has led to our present strong manufacturing setup in which automation and the use of digital computers for day-to-day

market evaluation and customer preference trends enables us to synchronize production and demand with much greater exactness. This in turn has pushed 'retail price' further in the background as a method of maintaining a profitable operation's level at the production line.

"Back in 1956 and '57 there was much discussion in the industry concerning the future of the distributor. The squeeze on margins had caused many distributors to question the future of their own individual businesses. Some actually did convince themselves that the reward was not worth the effort and liquidated their organizations. Others took a new look at the market prospects and the whole new group of home service products that were just then being introduced and decided that distribution as a function was there to stay. They got busy to adapt their operations to meet the new conditions that confronted them. The more progressive among them immediately recognized that home modernization provided a tremendous potential market that could be sold in a package of wiring, appliances, lighting and other accessories. They streamlined their own organization for faster turnovers and more efficient cost control. The independent appliance distributor broadened his line to include supply and lighting items in order to promote 'package' selling. They started to develop a new kind of dealer who could handle this package of home improvement from its rough sketch to the final touch of paint on the finished product. They saw in the rapid growth of electronic applications in the home a whole new field of profitable service operations that could be developed in conjunction with their new type of dealers.

"Events have proved that this latter concept was correct because even as early as 1956 the procurement and training of service personnel was difficult and even the largest dealer today would have difficulty in maintaining competent service people for the many different types of appliances and services that comprise the modern home. The industry owes a great deal to these hardy pioneering distributors who actually proved to be the keystone of the market development.

"The most significant change during the period has been in the dealer structure. The old-timers among you will remember the thousands of 'mama and papa' appliance dealers which sprang up to meet the postwar demands in the late 1940s. In the ensuing years they found the going progressively rougher. They could neither meet the highly refined merchandising practices of the big retail outlets and discount houses on one hand, nor could they supply the customer with the installation and service standards that she demanded. The introduction of color ensembles, packaged kitchens and laundries, and electronic devices for home service spelled trouble for the small white goods dealer. It was a case of either expanding to meet the new market conditions or going out of business. Many of them struggled along until the early 1960s. Those that survived did so because of an ability to expand their services either directly or through mergers and affiliations with other small concerns to meet the requirements of the customer today. Here again distributor and utility organizations proved to be of great help and assistance in developing the strong dealer organization that has grown up particularly during the past five years.

"Selling and sales promotional techniques also have matured during the past ten years. Sales personnel, which was scarce at the beginning of this period, is still scarce but the techniques of preselling through the use of unified industry campaign such as Live Better . . . *Electrically*, the really effective adaptation of television for demonstrations, the use of closed-circuit TV for cooking schools, decorating classes, and other home improvement ideas, have helped relieve selling time for the more important purpose of actually closing orders and following through to insure customer satisfaction. Despite all of our progress, even today we lack competent, trained sales personnel. As we stand here in 1965 we must find ways and means of getting better trained salespeople if this industry is to compete successfully with the helicopter industry, the travel clubs and all of the other industries that have sprung up to show people how to use the leisure that the electrical industry, through automation in the factory and work elimination in the house, has given them."

"It is the responsibility of business to *make* trends . . . not to follow them."

—E. R. Breech, chairman of the board, Ford Motor Co.

WHO'S GOING TO SERVICE THEM? Electronic applications such as this range that cooks by high-frequency induction will pose a new service problem for the appliance dealer—that of attracting and training a new type of service personnel

Thompson & Holmes photo

More and better intra-industry cooperation will be needed to meet growth, complexity, competition and other factors confronting the industry. In the future there will be

A Bigger Role for Associations

C. W. Leihy
Editor, Electrical West

Association activities are an important segment of America's business life and growth. Every segment of the industry has found it advantageous and profitable to employ the cooperative effort possible through trade associations in such various areas as industry development, legislation, public relations, research and personnel training.

Here in the West the electrical industry enjoys the benefit of three industry-wide associations, the recent deliberations of which are reported in this issue. It seems an appropriate time, therefore, to review the broad benefits of association activities, to discuss possibilities of using them still more effectively, and to explain to the many younger executives some of the philosophy behind the association concept.

In the electrical industry, association activities have been carried on for so many years that, to some, they appear almost routine. Such a concept is dangerous because the real value of the association lies in the ability of bringing concentrated action to bear on new and ever-changing forces that impinge on every industry group.

Let us consider what vigorous regional association activities, similar to our own RMEL, NWEL&PA and PCEA, can do for their members and for their industry. Most of these activities are being done in whole or in part by associations in other areas. Most of them are an indispensable part of the electrical industry's progress. And most of them can best be done by and through association work.

As far as utilities are concerned, there is no substitute for a good job of business management and business development at the local level, right in their own service areas. The power company in many areas is the largest locally owned corporation. The business community looks to the utility executive for leadership in many things. The other segments of the electrical industry such as the local manufacturers, distributors, contractors and dealers expect even more leadership from them.

Leadership Responsibility

The first responsibility of a trade association is to provide the focal point for that same kind of leadership at the regional level. The association can provide the vehicle by which the industry can present a united front to the public whether it be on matters of legislative importance, regional interest or promotional activities. The successful associations do not enter the political arena but rather they are the source for disseminating facts on political matters to the public and opinion-forming organizations in the various communities. And a united front is important in these days when labor leaders and political demagogues have gotten fat off the philosophy of "divide and conquer."

Most of the problems that confront American business today, whether it be the power business or the clothing business, are too big, too broad and too well organized, to be handled successfully by individual units. It requires unified action and a united front to cope with them, and a good association has demonstrated, time and again, that it can be far more effective as a unit than its individual members working alone. It's the difference between a bucket brigade and a high-pressure hose.

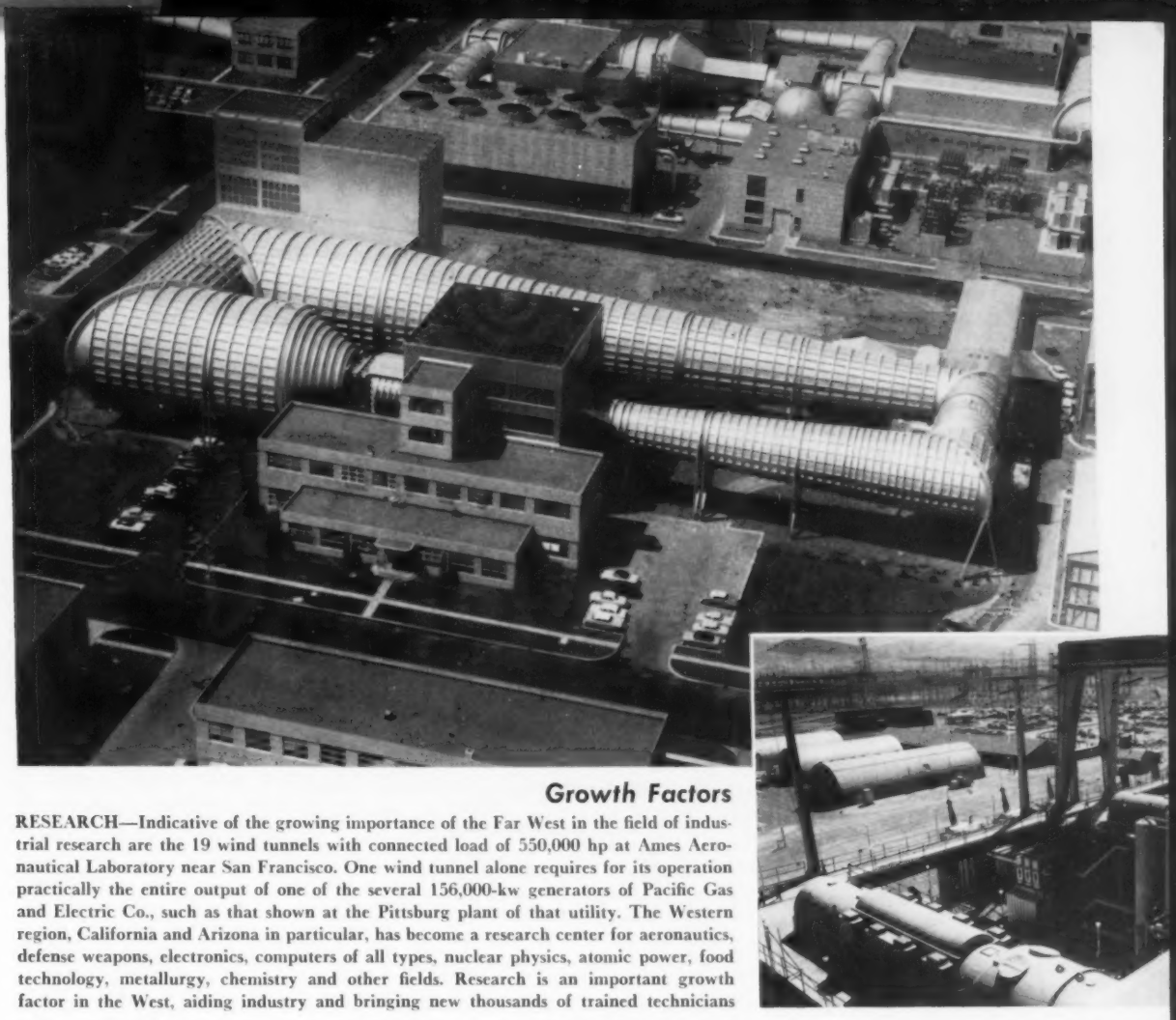
The second area where association activities can be most effective is in providing a rallying point for business development activities. Examples can be cited from acetate makers to zeolite producers where industry association activities have either reversed a disappointing trend in business activities or pushed up the rate of acceptance for a product far beyond the normal growth trend. There is a big area where regional promotions can add punch and impetus to local promotional activities. Just one specific example: A cake-baking contest for high school teenagers is a fine thing on a system-wide basis but is many more times impressive and effective when extended as an intersystem competition. For a very modest effort and investment, the publicity and interest at the very least are doubled.

A third area where association work is important is in providing a common meeting ground between the utilities and their trade allies, the manufacturers, distributors and others in the electrical field. Regional promotional activities are a fine way of getting better acquainted with trade allies. They should have an important place in association work. The association will be found to be a mobilization center for the entire industry if, as and when it is confronted with adverse or inimical influences. The meeting halls of the association are a place to tell your business friends of the whys and wherefores of your policies. The association's channels of disseminating news provide a way to get the thinking and support of these trade allies out to the general public.

There is still another region where the association can be effective. Joint

Associations Provide These Things for American Business:

- √ **Regional leadership**
- √ **A rallying point for promotion**
- √ **A mobilization center for trade allies**
- √ **Intercompany exchange of business information**
- √ **A training area for manpower**
- √ **Job satisfaction and recognition**
- √ **A vehicle for joint research**
- √ **A regional development center**



Growth Factors

RESEARCH—Indicative of the growing importance of the Far West in the field of industrial research are the 19 wind tunnels with connected load of 550,000 hp at Ames Aeronautical Laboratory near San Francisco. One wind tunnel alone requires for its operation practically the entire output of one of the several 156,000-kw generators of Pacific Gas and Electric Co., such as that shown at the Pittsburg plant of that utility. The Western region, California and Arizona in particular, has become a research center for aeronautics, defense weapons, electronics, computers of all types, nuclear physics, atomic power, food technology, metallurgy, chemistry and other fields. Research is an important growth factor in the West, aiding industry and bringing new thousands of trained technicians

research activities are a fertile field for cooperative effort. Market research, engineering, investigations, public opinion polls, load building, industrial applications and management development are only a few of the problems common to all members of the association. Investigations can be carried on more economically as a group and in existing research facilities such as state universities and colleges. An added dividend from this is the closer liaison that is developed with the educational institutions of the area.

In an allied field of endeavor, the association can aid in regional development by providing data and information needed by manufacturing organizations when deciding on new plant locations. Granted that there may be rivalary for the establishment of new industries between localities, all too often one region loses an industry to another because the over-all regional benefits have not been properly evaluated and presented to the prospect. In our case, it's sell them on the West first and then let the final location be determined by local chambers of commerce, utilities and businessmen acting together.

Work of Committees

Thus far only the external phases of association work have been mentioned. There is an equally important job that it does internally. Many people consider that the interchange of information, provided by the association's committee activities, is the most important single function of such a group. All too often this represents the sole reason for the association's existence. But important as it is, full mileage from the association dollars will not be realized if the activities are constricted to just one or two activities. On the subject of this exchange of information, however, the fraternization that committee meetings permit between the people of various companies is as important as the facts that they accumulate while so doing. The friendships that are made and the respect that is engendered pays big dividends in getting day-to-day work done smoothly and effectively.

By the same token the committee meetings impinge on another, and increasingly important, aspect of utility operations—that is, the training of executive manpower. Committee work in itself is a training in its own right. The presentation of papers is training in self-expression. Even the willingness to undertake and develop association activities is a measure through which badly needed supervisory and executive personnel can be evaluated. But even more important than that, a well-run association can undertake training in its own right. And it can do training on an intersystem basis at a much lower cost than is possible within the individual utility system.

One of the best regional utility associations actually has gone one step further and has developed a special university summer course for training executive manpower of its member companies. Another association sponsors a young utility executives group where the problems of the junior util-

ity executive are discussed and where he is exposed to some of the broader problems of electric utility management.

Job Satisfaction

There is yet another important aspect to association activities. This is in the area of job satisfaction. Most people are motivated as much by the possibilities of personal recognition as they are by the probabilities of future salary increases. Participation in association activities is one way of satisfying the need for recognition above and beyond that which can be obtained within the individual's organization. It is not surprising, therefore, that successful associations invariably have depth of membership within their individual member's organizations. And they encourage active participation in association work. In this same area, the sense of teamwork and mutual support developed by association activities is a morale builder that should not be underestimated.

Other activities and other examples could be cited but those already enumerated are sufficient to indicate the more important areas where association activities can produce beneficial results for the individual members. The time was never more propitious than now for a reappaisal of every association's activities, particularly with a view to meeting the new conditions that exist regionally and nationally.

Through good national and regional association work, the electrical utility industry has been able to survive the concerted attacks of federal power proponents. Investor-owned companies have learned to live with public power. Public power, in one form or another, is here to stay. It has aggressive proponents who will not be content to let status quo alone. An example of this is the recent bill introduced into Congress to give TVA a blank check for building, expanding and confiscating, without checkrein of any sort; the proposal of Senator Morse for atomic plants in the Northwest.

In that area the domination of the federal government on the watersheds of the region has been broken. The partnership policies of the present administration have been partly implemented. But there is still a big job to sell the public everywhere on the values of these policies.

Manpower Problem

There is still a bigger than ever promotional job to be done by the industry. There is the continuing problem of recruiting, training and holding good manpower in the industry and the new problem of getting more production out of that manpower in the field of automation. Power systems are growing bigger and more complex with a concomitant growth in the technical problems involved in design and operation. In all of these things, strong association activities can and should play a major role. If there ever was a time that associations can pay dividends, it would seem to be in the immediate future.

Getting Results

Too many people ask, "How do you get results from association work?" The answer is that successful association activities stem directly from the leadership and attention by top management. The return from the association is commensurate with the leadership that goes into it. Executives can delegate authority but they cannot delegate policy, particularly in association work. They can put up money for the association but they can't buy enthusiasm. That comes only as the reflection of their own attitude individually and collectively.

From the money aspect, a strong association does not come particularly cheap. "You only get what you pay for" but, with the proper setup, it's possible to make dollars spent for association work yield just about the biggest return of any dollars spent anywhere.

Competent Administrator

A good administrator and a competent staff are basic essentials but it's just as important to have depth of membership in the association throughout the individual organizations that compose it. And it is well to make it easy for trade allies to hold membership and participate in the activities. Finally, a broad and active program must be set up and implemented aggressively. Today there are so many things that need to be done in every segment of the American economy, that the selection of an association program is mostly a matter of deciding how much there is to be done within a given period of time and an available amount of money.

The enemies and the competitors of the electrical industry are many and they are well organized. They keep encroaching in many sectors. A strong and well organized association not only can provide a stout outer perimeter of defense but also can provide the means for aggressive counterattack, particularly in the areas of promotion, public relations, technologies, regional development and others.

In summary, associations can and do play a vigorous and vital part in the growth and development of business. They can be the focal point for intercompany activities and they can perform many functions far more effectively and economically than can be done by individual members operating on their own.

Our fine regional associations in the West bridge the gap between the activities of our large national associations and the work that continually must be done at the local level and within the serving area of the individual utilities. They provide the structure for interutility cooperation with manufacturers and distributors organizations, most of whom operate on a regional rather than a local basis. Theirs can be a role of growing importance and effectiveness in the future growth and development of every individual and unit which, in the aggregate, represents the great electrical industry of the West.

An Acknowledgment

ELECTRICAL WEST is proud to have had a part in the activities of the regional associations that have played such a vital role in the electrical development of the West. On the pages of its past issues are recorded the reports of association activities and the records of growth and development which have made the West the most highly electrified region in the world. Thus it has kept members of the associations in contact with their activities and informed about industry developments. The magazine has been a medium through which the promotional plans of the industry could be disseminated to all other segments of the electrical fraternity, many of whom are not members of any particular association but who have a part in the success of any given program.

More important still, each issue has been a place where industry people have received well-merited public recognition for the jobs they are doing individually and collectively. And, finally, ELECTRICAL WEST is proud to have been considered by many as a spokesman for the basic policies of the industry—policies which in no small measure have been formulated through association activities, and policies which have, today, been largely responsible for the vigorous healthy growth that the industry has enjoyed in the eleven Western states.

Selling is more competitive than at any time in history but there is a place in the picture to work together to

Live Better Electrically

S. W. Scott
President, Pacific Coast Electrical Assn.

PCEA's president speaks . . .

Whether or not you are of the school which believes that opportunity knocks but once, I am sure we all agree that when she does knock we should answer and take full advantage of what she has to offer.

That is why we adopted the slogan Live Better . . . *Electrically* as our convention theme. It seemed to us that opportunity was knocking loudly at the door of everyone in the electrical industry and that we could ill afford to ignore her call. Selling is more competitive today than at any time in history, and each of us tries desperately to outdo the other fellow, but there is a place in that competitive picture, and there should be a place in each of our personal schedules, no matter how busy, to work together for progress.

We are an industry of many and widely diversified interests and, without that spirit of harmony, that consciousness of industry unity, our accomplishments would be slow and negligible; because despite the variety of activities involved there is a strong trend of interdependence which must be recognized to maintain progress.

Of course there are differences of opinion between individuals, between companies and between branches, just as disputes flare up between members of a family; but when the chips are down, our industry, like any normal family, stands shoulder to shoulder and presents a united front. That is the way it should be, and *must* be, if we are to continue to grow and prosper and to go on expanding the services which we render our customers so they may Live Better . . . *Electrically.*

Just 10 years ago a document was being circulated widely in our industry. It was known as the "Declaration of Electrical Interdependence," and because we were all busily engaged in converting from a wartime to a peacetime economy it did not receive the attention, or the permanence, to which it was entitled. The truths which it embraced apply as unerringly today as they did 10 years ago.

I would call your attention to the fact that 10 years ago we viewed our future from the threshold of the Electrical Age—and that today mankind has crossed that threshold and has entered boldly into an era in which the services of our industry are integral and essential parts of his living habits.

Man has, in fact, outstripped the electrical industry in his progress into the Electrical Age. He has accepted, and is demanding, electrical services which we are unable to render because we did not maintain wiring standards at a rate of growth comparable to that of the loads imposed upon them. To meet that obligation the industry has produced a second great cooperative program which will be carried forward under the banner of "Housepower."

A tremendous advertising and selling campaign is now under way on both of these programs—Live Better . . . *Electrically* and Housepower—which will be outlined in detail during the course of this convention.

With a recognition of our part in, and our responsibility to, our industry and our customers, let us all pledge ourselves to dedicate the time and effort necessary to make these programs a success. Opportunity has knocked and left a pair of lusty, sturdy children upon our doorstep. Their fate is in our hands. If we adopt them, nourish them and guide them, they will grow to a very productive maturity. Take them in as part of our family.

Declaration of Electrical Interdependence

"When, in the course of scientific progress, the great power of electricity was first directed to the service of mankind, and in the brief measure of these 67 electrifying years has transformed our national life, a proper respect for the electrical industry's responsibilities toward the coming Electrical Age requires that all members of the electrical industry shall now publicly declare their sense of obligation and interdependence.

"We hold these truths to be self-evident:

"That it is the manifest destiny and privilege of the electrical industry to remove from the American scene every last vestige of avoidable unnecessary and wasteful hardship in living and working;

"That our industry has immediately before it the opportunity to create patterns of electrical use for American homes, industries, farms and every major portion of American enterprise, all of which have used but a fraction of the strength of electrical service that is theirs to command;

"That the shadowy dreams of the founding fathers of our industry are just now being seen on the horizon of tomorrow's Electrical Age in the full perspective of their promise;

"That we do fully realize the true measure of the electrical industry's responsibility to the future economic health, welfare and progress of our beloved country;

"That, because the patterns of electrical products have and will increasingly become the very form, in fact the lifeblood of every phase of life in the Electrical Age just beginning;

"That, in consequence, and because of the part we play in the distribution, sale and installation of electrical products and electricity to operate them, we hereby say to the American people, 'We will do our part in bringing to the markets more products and better products at less money, and thereby help to create and maintain the high levels of employment vital to our future';

"That we can and do say to the American people, 'The great power of Electricity will make your living and working conditions better, healthier, and happier';

"Therefore, the men and women of the electrical industry, who today deal with this great force now grown from a single glowing filament into a billion-pronged servant of progress, realizing their obligations and the increasingly complex character of their respective undertakings, do hereby declare—

"RESOLVED . . . that all Members of the Electrical Industry recognize their common cause for progress into the Electrical Age; that all recognize the factor of electrical interdependence between branches within our industry; that all will henceforth be ardent supporters of the electrical idea to the end that this Declaration of Electrical Interdependence shall become a living document in honor of our pioneers and in trust for the welfare of those who follow."

Las Vegas was backdrop for 39th annual PCEA meeting. Theme:

Teamwork Will Build Better Living..

Leaders of the electrical industry in California, Arizona, Nevada and the Hawaiian Islands descended upon Las Vegas in numbers that put the attendance record over the 1,000 mark to hear a program built around the industry's two newest promotion programs. It was a program that had wide interest for members of every segment of the electrical industry and it was presented to the delegates by nationally known authorities on all phases of the industry's operations.

At the kickoff luncheon on Monday, May 14, presided over by L. A. Hicks, president of the Hawaiian Electric Co. Ltd., A. G. Patterson, president of the Square D Co., sounded the keynote for the program. He told the delegates that American business must build human values as well as material values in its progress toward the new era that our science and technology promise. He used the industry's new campaign, Live Better . . . *Electrically,* to illustrate that such a slogan is in tune with the growing tendency to take a long look ahead and to plan accordingly.

"In America," he said, "perhaps more than anywhere else in the world, business is an institution with social and political responsibilities." In expanding this theme, he pointed out that, in striving to bring more comfortable and better living to the American people, business is still an organization that serves as an effective channel for releasing and multiplying the creative energy of men and women who make up the organization. Business and associations such as PCEA are a means of fitting together many individual talents to add to the common store, create more wealth and raise the standards of living higher than could be done by individuals acting without concert. Today the sound business organization is a means of releasing and multiplying individual effort and as such is a device for doing greater good.

Patterson suggested that the first motivation of human beings may not be self-interest but rather seeking friendly and affectionate human association. Business organizations must provide a climate where individual workers can obtain the satisfaction of doing a good job and they must be prepared to protect the dignity and freedom of the individual worker. It should fulfill the great human desire to create, to do, to fulfill and to be appreciated.

The profit motive in modern business is good, he added, for it is only through profits that expansion and growth can come. This represents a clear-cut measure of business success and assures stability and opportunity for the individual employee.

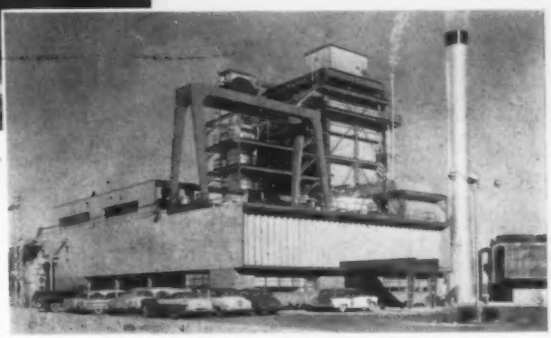
In this age of bigness and growing

Scott
Graybar

Maytham
Westinghouse

Growth Factors

RECREATION—Las Vegas' luxury hotel-casinos, three of which are shown, is one of many recreation centers of the West. Nothing anywhere in the world equals the "Strip"—not even Monte Carlo. Air transport has popularized "quickie" vacations to this glamour spot from all over the nation. With load growing at the rate of 35% a year, Southern Nevada Power Co. is making an installation of a second 60,000-kw unit at its Clark plant, shown



. . Electrically

automation, Patterson stated that the danger of employees becoming statistics rather than individuals can be avoided by better intracompany communications. Any organization that fails to provide an atmosphere of understanding among all employees regarding the company's policies, plans and objectives may fail in the basic purpose of accomplishing together that which the individual alone cannot accomplish.

According to Patterson, this sense of mutual accomplishment is one of the most important factors in human relations and can be most easily identified with campaigns like that of Live Better . . . *Electrically*. Accordingly, individual companies and the electrical industry as a whole can plan with enthusiasm to bring better living conditions to the American people, secure in the knowledge that they are making a contribution to the comfort and well-being of their fellow men.

At the first general session of the convention, PCEA's President S. W. Scott, division manager for the Graybar Electric Co., continued the theme of Patterson's address in his welcoming remarks. See p 113. Scott pointed out that mankind lives in an era in which the services rendered by the electrical industry are integral and essential parts of men's living habits. He reread to the members of the convention the "Declaration of Electrical Interdependence," which was drafted by the industry 10 years ago. This document, which dedicates the electrical industry to bringing to the markets more and better products for less money, also recognizes the importance of the interdependence of all branches within the industry and their common cause for the progress into the coming electrical age.

Scott pointed out that the declaration takes on new meaning now that the industry has two broad promotional campaigns, "Housepower" and "Live Better . . . *Electrically*," around which to rally.

Art W. Hooper, executive director of the National Association of Electrical Distributors, addressed the convention on "What Is the Electrical Industry's Responsibility?" He called on the industry to focus the attention of the general public on the contributions that electricity has made to the American way of life and toward the economic strength of the country. "Inter-industry cooperation will build a greater electrical age for America," he stated, and he called for industry solidarity dedicated to bringing greater electrical benefits to the American people.

Housepower Program

A behind-the-scenes look at the development of the electrical industry's new Housepower program was presented by P. Howard Farley, sales promotion manager, National Electrical Contractors Assn. This new program is aimed upon the rewiring to modern adequacy of at least 2,000,000 homes per year for the next 10 years. Although Farley told the convention that Housepower is a million-dollar national advertising program designed to help break the wiring bottleneck in existing homes, it is by no means the whole story behind adequate wiring promotion.

In 1956 the electrical industry will spend a minimum of $8,760,000 to convince homeowners that their homes need more wiring. These monies, to be spent by utilities, manufacturers and local business organizations, will supplement the million-dollar Housepower campaign, which is sponsored by the Edison Electric Institute.

Farley told about the research activity that has been carried on in the past to develop the Housepower campaign. Among other things, the exhaustive investigation into the market potentials and methods of developing them revealed that mass education and advertising without personal selling are ineffective. Research also has shown that personal selling without the broad background of mass education and promotion is not sufficiently effective to justify the high price of rewiring to adequate standards.

The Housepower program, which was launched last month, is a powerful, consistent and concentrated advertising and sales promotion attack on the problem of mass education to condition the American housewife on the

Patterson
Square D

Hicks
Hawaiian Electric

need and justification for a modern wiring installation. This is to be followed through by both national and local campaigns plus personal selling, the latter being an indispensable ingredient in a successful campaign according to the studies made on the subject.

The 1956 Housepower program has eight parts. The first is the main theme, "Housepower." This one word gives new meaning to the complicated concept of adequate wiring and will provide a rallying point around which all branches of the industry can carry on promotion. The second part of the program is the national advertising program, which is sponsored by the Edison Electric Institute and will reach 6,500,000 readers each month. The third part of the campaign is tie-in advertising, which will be sponsored by leading manufacturers, associations and by others cooperating with the Housepower program.

Part four is a $100,000 contest for the consumer on the subject of "How's Your Housepower?" This contest will run for five months, from May through September. It is a tool that will not only help force readership of the Housepower story but will supply quality sales leads for local action by utilities, contractors and dealers. In brief, the contest entrant must count the fuses in her home, check her service entrance wires and recall when the last fuse blew. It is an effort to get immediate action on the part of the customer.

Part five of the Housepower campaign consists of advertising in newspapers over local utility signatures and part six will introduce two nationwide television shows, "Today" starring Dave Carroway and "Home" starring Arlene Francis. These two programs will carry the story into 2,000,000 homes every day, four days a week. They will begin in September at the end of the contest period and Housepower commercials will appear twice each week on each show.

Parts seven and eight of the program will include local promotional material and a 16-page consumer booklet on the subject "Housepower—The Key to Modern Living."

Live Better . . . Electrically

Farley also told the convention of details of the Live Better . . . *Electrically* campaign (see EWEST March 1956) and how the Live Better . . . *Electrically* campaign can and will tie in with the promotion of Housepower. He concluded his address with a discussion of the market potential for the industry that lies behind a successful program to rewire 2,000,000 existing homes per year for the next 10 years. This market potential represents $5 billion worth of rewiring business—25% more than all the business handled by all electrical contractors in all 1955. It would better than double the dollar value of work union journeymen enjoyed during that year.

He estimates that the rewiring mentioned above would touch off a chain reaction of "plus" appliance business that would be felt right back through the industry to the generating plant. The effect on the industry as a whole would be measured in billions of dollars of sales of appliances, supplies and equipment. It is a brand new market that the industry can open up through aggressive and vigorous promotion of the two new campaigns, Housepower and Live Better . . . *Electrically*.

The report of activities of PCEA's Business Development Section was presented by the chairman of that section, Jack Kiedaisch of Arizona Public Service Co. Highlights of the section's work during the year included seven "Know-how" clinics, at which more than 675 instructors and home service people were provided with information on electrical living to carry back to their 20,000 students. The home lighting committee also developed three talks that could be used as guides for utility companies to use in promoting home lighting in their territories. Other promotional activities of the section included the heat pump, certified lighting, kitchen and laundry modernization, and agricultural electrification.

Kiedaisch reported that the annual fall meeting of the section was an outstanding event, attended by 277 people from 66 different organizations within the Western electrical industry.

Creative Selling Required

At the second general session, presided over by C. C. Walker, commercial vice-president, General Electric Co., Edward R. Taylor, assistant to the president of Motorola Inc., paid tribute to the industry's salesmanship for bringing the country to its present high state of living standards. He traced the development of appliance merchandising from the early days of the refrigerator to date, pointing out that creative salesmanship has made it possible for the American housewife to enjoy all of the many electrical servants that are at her disposal today.

According to Taylor, more and better creative selling will be required to fulfill the promise of the Live Better . . . *Electrically* campaign. He stressed the need for better and more efficient marketing methods that will move goods in ever-increasing volume. "The discount house," said Taylor, "sprang up to fill the vacuum in merchandising methods that resulted from the excess consumer demand after World War II. While price cutters are not creative merchandisers, there are many discount-house operations which employ sound merchandising methods to obtain a high turnover. Such houses generally improve the over-all sales in the area in which they operate."

Philip D. Reed, board chairman of General Electric Co., told the convention of the interdependence of national growth and business planning. Reed stated that the long-range plans of industry, translated into heavy spending for such things as research and new plant, may well turn out to be the most important single element in this country's phenomenal economic growth since World War II. He urged

Hooper NAED **Farley** NECA

MacDonald Hixson & Jorgensen **Brighouse** Occidental College

Tuttle Motorola **Koontz** UC

businessmen to look at least 10 years ahead and to believe the statistics of population and economic growth that are available today. The very process of making long-term plans and reviewing and extending them each year orients executive thinking and judgment to the needs and possibilities of business far into the future. This long-range planning, plus the expenditure for capital goods and research that accompanies it, can prove to be a very substantial stabilizer in the economy of the country.

The current trend toward automation to increase productivity also tends to provide steady employment. But it also increases the emphasis on sound and efficient marketing methods, which will move the goods coming off the production lines of the nation. It is anticipated that the country in the next 10 years will get a 40% increase in gross national product with only a 14% increase in the labor force. This trend will be reflected in an increasing income to the individual families, which will make it possible for more and more people to enjoy the benefits of the products that are being produced.

Reed defined the concept of "growth" as the "setting of definite long-term targets by business organizations and the creation of step-by-step, long-term plans to achieve them." In asking businessmen to lift their sights on the future potential of the country, Reed paid tribute to the availability of low-cost electricity throughout our nation. This has been a basic factor in the growth program that has built America to the highest living standards in the world. From the standpoint of the electrical industry, the current predictions of the country's growth during the next 10-year period means that there will be as many items of power-producing, transmitting and distributing devices produced during that period as there were in the first 75 years of the industry's history.

Research Needed

Dr. Jesse Hobson, Stanford Research Institute, who followed Reed on the program, gave the delegates a preglimpse concerning the part that research is playing in the development of the West. He stated that new scientific explorations and new technological developments suggest that even the tremendous achievements of the past will be overshadowed by those of the future. Although the West represents the limit of the geographical frontiers of the nation, the economic frontiers are still as distant as ever. Today, enthusiasm, ambition and a wealth of natural resources are no longer enough to provide for development and progress. Progress and prosperity must come through the advance of scientific research and technological development.

Dr. Hobson stated that the economic and cultural structure of the future will depend upon how the country applies its three main types of power. The first type is that of energy, which multiplies the productivity of man. The second is the application of brain power, trained, organized and creative —brain power, which today seems to be in an alarming short supply. The third type of power is the power of ideas, the determining factor in our collective ideas and ideals, and our visions and images of the future we are building.

Concerning our sources of energy, Dr. Hobson suggested that we may be too complacent about our ability to meet the problems of mechanical and electrical power requirements of the future. He pointed out that the rising demand for energy is bringing us close to the peak production of energy from fossil fuels and that shortages in these sources probably will take effect not later than 1975. Likewise, the country is using much of the irreplaceable fossil fuel reserves in a most inefficient manner, to wit, the use of petroleum in automobile engines. He suggested that the development of nuclear resources is being handicapped by present restrictive limitations in their general knowledge imposed by security requirements. Research, according to Hobson, may well make it possible to convert the abundant solar energy to help fill many of the demands for energy that a rising standard of living and productivity will entail.

Like fossil fuels, brain power also is in short supply and is being shamefully wasted in all too many instances. This shortage in trained brain power may force the use of pools of professional talent, which can be called upon by individual companies as needs arise. Such pools of trained manpower would be "horizontal" in nature rather than

Hobson SRI **Sinnott** San Diego G&E

Reed General Electric | **Walker** General Electric | **Taylor** Motorola

"vertical" such as are now provided in specialized organizations for engineering design, management, marketing, etc.

Ideals Stressed

The power of ideas and ideals is of tremendous importance today because it is at this time that the very structure of the future is being designed in accordance with people's thinking today. The visions of individual freedom and enlarged individual opportunities cannot blossom if the present generation continues to rely more and more on government to regulate and supervise the free enterprise system, and control the avenues of future development such as nuclear energy.

Dr. Hobson concluded by stating that research is the great creative construction force of our time and that research must be applied to get the facts and apply those facts for the solid foundations of the future. Research can help solve our future needs for power and energy, can develop and sharpen our creative minds, and can discover and shape our ideas and ideals.

J. F. Sinnott, vice-chairman of the guidance committee of the Engineering and Operating Section of PCEA, reported to the convention on the activities of that section during the past year. These activities culminated in the spring conference, held in March, in San Francisco, which recorded the largest registration of any working group in the history of PCEA. At that meeting 872 delegates registered for a two-day session at which an excellent program covering a wide variety of engineering subjects was presented. (See EWEST, April 1956.)

Business Psychology

At the third general session, Chairman Walter J. Maytham, vice-president, Westinghouse Electric Corp., presented four speakers. The first, Dr. Gilbert Brighouse, professor of industrial psychology, Occidental College, discussed the subject "Industrial Psychology in Your Business." He outlined the role of the industrial psychologist in the modern business organization. The psychologist's work centers around several industrial activities, according to Dr. Brighouse. One is the appraisal of the new employee and of the candidate for a management position. In this situation, the psychologist should assist with the best interviews available and with the judicious use of tests in order to obtain an individual evaluation of personality. This is best done, not by having the psychologist make the appraisal himself, but by helping the line officers of the company to make their own. Another area of activity is in the management development program, particularly through conferences in human relations, communications, appraisals, interviewing and counseling. A third important area for work of this type is in measuring the "climate" of the company, with a view to suggesting to management the important areas where training is needed.

Markets Are Made—Not Born

The second speaker at the third general session was Tyler MacDonald, vice-president of Hixson & Jorgensen Inc. MacDonald accented the theme of the convention by stating that markets are made, not born. Masses of people, with or without money, do not in themselves guarantee good business. He stated that the most dangerous single threat to our economic future is the persistent theory that the booming population increase due in the 1960s will automatically bring about prosperity. Merchandising and selling are indispensible activities if the country is to obtain the promise that its productivity and population growth indicate.

MacDonald observed that public attributes are basic in establishing trends. Operations that run counter to these attitudes can result in disaster but those that are in accordance with current public beliefs are bound to thrive. Currently, he stated, the popularity of large families and informal living present great opportunities for growth development of the electrical and business industries—provided that good selling is employed aggressively to capitalize on people's wants and desires.

Guibara U. S. Rubber | **Gros** PG and E

Growth Factors

HOUSING — New residential tracts like this aerial view of a new development in Phoenix are under construction in the metropolitan areas of all large cities and almost every small town in the 11 Western states. This year there will be 300,000 new homes built in the West. Each will have an investment of nearly $1,000 in appliances, to say nothing of wiring, lighting and approximately 750,000 kw of generating capacity and 8,000 miles of new distribution lines that will be required. Distribution substation capacity planned for 1956 is 2,312,173 kva. Linemen at work on new construction like those of the Arizona Public Service Co. shown is a familiar scene throughout the West

Management Development

Dr. Harold D. Koontz, in discussing "Developing Managers for the Managerial Job," told the convention that we seem to be entering upon what future historians will call "the management age." He emphasized the practical and profitable realism of management development in both large and small companies, but he warned against the dangers of making a fad out of such a program. Each company, through self-appraisal, must have a program tailored to its own individual and particular needs, not a "canned" procedure taken from some other source or group.

Business survival in the competitive era that lies ahead will require the best possible harnessing of group effort. In this era, there will be a continuing shortage of human resources. Today, American industry is on the greatest man hunt in its history, to find and develop people who can "get things done through people, instill a willingness to work, provide a group environment for accomplishment, and find means of bringing individual contributions to the attainment of group goals."

Even more significant, according to Dr. Koontz, is the apparent realization by businessmen that, in a free-enterprise society, management alone can establish the answer to the aims and satisfaction of the people in their economic life. The alternative, as illustrated by the popularity of the New Deal and the Fair Deal, could be a people's choice of the security of a paternalistic government. Dr. Koontz spelled out the major functions of a good manager. These are (1) planning, (2) organizing, (3) staffing, (4) directing and (5) controlling. Management development programs should have at least two single goals—the strengthening of the existing management and its perpetuation on an enlarged and expanded scale.

To accomplish these goals, the companies' top management must provide a climate favorable for good management and management development, provide help in self-development through such aids as proper organization, systems for appraising management's strengths and weaknesses, and the sharing of techniques of effective management. In this connection it is necessary to instill in the organization from the president down to the foreman the fact that the primary responsibility for development must rest with the immediate superior through counsel, guidance and teaching.

The speaker stated flatly that management development was not easy. It must begin at the top because "example is a prerequisite to that key source of management education, the subordinate management."

Pitfalls Told

Another danger in management development lies in too strong a tendency to rely on such formal devices as university programs, company seminars and conferences. The best trainers of management are the managers themselves. Another of the pitfalls of management development is the implication that the program represents a sure road to promotion. Too often managers regard it as a guarantee of a higher job—a conveyor belt to bigger pay and responsibilities. The primary emphasis should be placed on the development of a man and of increasing the quality of management in his present job.

In concluding, the speaker pointed out that qualified managers are the most important business asset that the company has. As such, the present managers have a primary responsibility to take every reasonable step to assure continuation of top quality management in the future.

At the final luncheon, Robert Gros, vice-president of the Pacific Gas and Electric Co., sounded a resounding challenge to businessmen generally and the electrical industry in particular, to hurl back the threat of totalitarianism to the freedom of this and future generations. Gros used information gained on a recent trip through Russia to contrast the sharp differences between the totalitarian and free enterprise systems. He called for business and political leadership that would not be afraid to face might or possess might itself. He called for community leadership that would be an active and fighting faith in what the American system can do for the people.

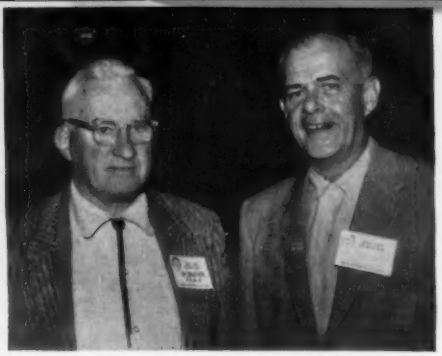
Gros called the electric utility industry the "flagship in freedom's fleet." He stated that those who are privileged to serve within its command must reject false prophets of little and

Watkins
Kuhlman Electric

Ernst
California Electric

Shelley
Federal Pacific Electric

Atcheson
Sierra Pacific Power



Dreyer
PG and E

Wheaton
Line Material

uncertain faith in the American way and those who feast at the bountiful board of the American system but who avert their gaze when detractors besmirch it.

He reported that Russia had made great material progress as a nation but at the expense of all personal liberty and opportunity. In contrast, in this country human progress and the dignity of the individual have been achieved by the adherence of ideals and principles and the preservation of freedom. Gros called for pioneering of the type that built the great West, the type that produced men who grasped and shaped things for the common good of all.

F. W. Mielke Jr., PG and E, reported to the convention on the activities of the Administration Services Section of the association. This group held two conferences, one in the fall of 1955 and the other in the spring of 1956. At the former, the general theme was electric data processing particularly as applied to customer and cost accounting, processing pay rolls and stock control. (See EWEST, December 1955.) The activities of the second conference were reported in the May 1956 issue of ELECTRICAL WEST.

One of the important committee studies, which has been undertaken, is an investigation of paper-work management with a view to reducing both the number of forms and the man-hours involved in processing letters, reports and all of the other thousands of communications that are involved in utility operations.

Old-Timers Honored

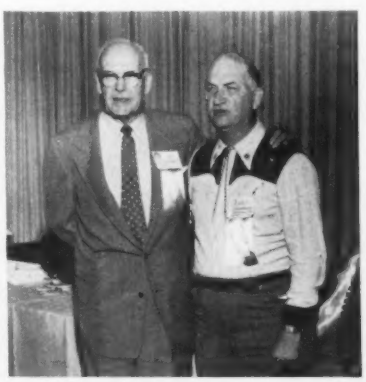
At the concluding general luncheon session, 11 retired members of the industry were honored with appropriate scrolls for past endeavors that have helped build the association. The men so honored were Ray Turnbull, former commercial vice-president of General Electric Co.; William de Waard, Percy Pine, A. E. Holloway, and G. H. P. Delman, all former employees at the San Diego Gas & Electric Co.; James Pollard and E. G. Stahl, PG and E; Allan Jones, formerly of General Electric; Ralph Hopkins, formerly of Westinghouse; Dave Harris, formerly of General Electric Supply Co.; H. C. Rice, formerly of the Southern California Edison Co.

At the annual meeting of PCEA, Walter J. Maytham, vice-president of Westinghouse Electric Corp., was elected president of PCEA for the year 1956-57. Vice-presidents elected for his administration included Walter Lucking, Arizona Public Service Co.; L. A. Hicks, Hawaiian Electric Co.; Reid Gardner, Southern Nevada Power Co.; Norman Sutherland, president, Pacific Gas and Electric Co.; and Graham Holabird, National Electric Products Corp., Los Angeles.

Committee Chairmen

Committee chairmen appointed for the next year include J. A. Talley, California Electric Power Co., chairman of Administrative Services Section; D. S. Aiken, PG and E, chairman of the Business Development Section; and J. F. Sinnott, San Diego G&E, chairman of the Engineering and Operating Section.

Convention facilities at Las Vegas proved to be excellent and great praise was heard for both the general convention committee and the host utility, the Southern Nevada Power Co. The convention committee was headed by J. H. Pengilly, Square D Co., with D. D. Smalley, vice-president and general manager, Southern Nevada Power Co., and L. M. Guibara, U. S. Rubber Co., acting as co-chairmen.



Success of PCEA's 39th annual meeting can be credited to the leadership of these members of the convention committee. Above—Joe Pengilly, general convention chairman, with Leon Guibara, one of the co-chairmen; left—Dunlap Smalley, the other co-chairman, and Reid Gardner, president of the host utility, Southern Nevada Power Co.; right—Vic Hartley, PCEA's managing director, with E. D. Sherwin, president of San Diego Gas & Electric Co., who chairmanned one of the convention sessions

Economic expansion in the Rocky Mountain area has never been more vigorous. Possibilities for the electrical industry have never been more promising as all of us

Promote, Expand and Prosper

D. B. Hyer Jr.*

President, Rocky Mountain Electrical League

RMEL's president speaks . . .

The 1956 spring conference of the Rocky Mountain Electrical League, reported in detail on the following pages, typified the optimistic spirit which pervades all segments of the electrical industry of the region. Economic growth and expansion have never been more vigorous. The possibilities for the electrical industry have never been more promising. The Live Better . . . *Electrically* program, which was featured at the spring conference, suggests an even greater cooperation between the various trade allies in the industry, will provide a strong stimulant for business growth.

Utility construction and expansion, proposed and planned for 1956, are again indicative of high-level sales and activities for all segments of the industry throughout the area. Appliance dealers and distributors, as well as contractors, following the impetus of the Live Better . . . *Electrically* program and "stepped up" utility sales promotions, should show excellent results for the year.

In its service area, Public Service Co. of Colorado, with a construction budget of approximately $21,000,000 for 1956, contemplates the addition of 222,000 kw of generating capacity, of which 122,000 kw are already under construction. The major portion of the capacity will be at the new Cherokee plant located north of Denver and the remainder will be at the Cameo plant near Grand Junction. Considerable expansion of the company's distribution and transmission systems is also in progress.

The Southern Colorado Power Co. program of system improvement for its area in the Arkansas River Valley will require more than $3,000,000 in new facilities to be constructed during the year. About 70 miles of new 115-kv transmission line will complete duplicate transmission connections between all steam power plants at both 115 kv and 69 kv. A large new substation near Pueblo will tie the two systems together and will be a terminal point for the 115-kv interconnection with the city of Colorado Springs.

To meet growing electric needs of the western slope area, Western Colorado Power Co., contemplating a stabilized lead, zinc and copper market coupled with continuing uranium mining and milling in the Colorado plateau, will spend about three-quarters of a million dollars on new facilities. One of the more important projects is a flume replacement at the Ames hydroelectric plant, which with design almost completed will proceed in the near future.

Colorado Central Power Co. estimates construction requirements for the year will exceed $3,000,000, which will be the largest in the company's history for any one year. Considerable new industrial activity and residential construction are in prospect. Home Light & Power, serving the Greeley area, also plans extensive distribution additions and improvements consistent with the industrial, commercial and residential expansion taking place or planned for the near future in the company's service area. The Colorado Springs Municipal Utilities, always active in league affairs, is adding generating capacity and transmission facilities which are, in part, to provide for the requirements of the United States Air Force Academy under construction nearby. In South Dakota, Black Hills Power & Light Co. has a new generating unit under construction that will cost about $3,500,000. Additional transmission facilities are also planned and in progress.

For the Wyoming area, Pacific Power & Light Co. has announced the selection of a site along the Platte River near Glenrock as the location for its new 100,000-kw Wyoming power plant and will begin actual construction this summer. The project, including fuel development and transmission line construction, is expected to require an investment of about $25,000,000. To bring additional power into the state before the new plant is completed, Pacific is now constructing a 45-mile, 161-kv transmission line from the Montana Power Co. facilities at Billings to the Yellowtail dam site where it will connect with another new line now being completed by the U. S. Bureau of Reclamation at Lovell. Two new distribution substations in Laramie will improve voltage and service conditions. A feasibility study is under way on a proposed 210-mile, 161-kv line from Yellowtail to Casper via Buffalo and Sheridan.

In early January the league started intensified adequate wiring promotion through the Electric Modernization Bureau, a group of electrical contractors offering specific services, special financing plans, etc., in connection with home wiring improvements. A member of the league staff is in constant touch with the program, which is expected to show improved results in both new home wiring and modernizing of existing installations.

With all dealer members, utilities and the Colorado Farm Power Council cooperating, a successful Dryer-a-Day promotion was completed in late March. Other similar promotions are or will be scheduled throughout the year, including range, water heater and air conditioning units.

A special meeting of utility representatives recently convened in Denver to discuss the implementation of an area public information program and other matters of immediate importance to this group. This fall the annual convention of RMEL will bring prominent representatives of the industry to the Rocky Mountain region for a program of interest to all segments of the electrical industry.

* Mr. Hyer is president of the Southern Colorado Power Co., Pueblo, Colo.

Mile-High RMEL Keeps Climbing

So you weren't able to attend the Rocky Mountain Electrical League spring conference? Too bad, because it was the best ever, with more than 400 men and women in attendance and the strongest program so far.

Then let me give you a rundown on its significant features, its thought-provoking talks, interesting displays and all-round benefits. You who were there, check me if I'm wrong.

It was a workshop type of meeting and ofttimes a shirtsleeve one because the weather was excellent. Like a four-ring circus, the accountants, the engineers in two separate sessions, and the sales and advertising people ran at the same time all day Monday and Tuesday morning. Luncheons Monday, April 30, and Tuesday, May 1, and an afternoon general session Tuesday brought them all together for industry-wide messages on the Live Better . . . *Electrically* program, which was the theme of the conference, color television and finally advertising and promotion of the entire business.

A test preview of *The Fabulous Atom* soon to tour Public Service Co. of Colorado territory as an educational feature was given before the conference Monday evening for its criticisms and suggestions prior to taking it on the road.

RMEL President Dave Hyer, Southern Colorado Power Co., let Robert Person, newly made vice-president of PS of Colorado, explain its purpose. Public-power advocates, he said, urge that all nuclear power development be by the government. This ignores what the utility companies and their customers contribute toward the program through their taxes. An attempt to acquaint the public with the part played by private enterprise in this development, without making it a propaganda show, will be made by the information department, headed by John Kerr.

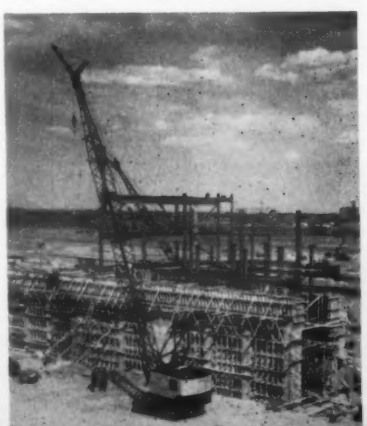
Utilizing the showmanship skill of Gus Lindemann on display, a script by Bob Janke (checked by the medical and engineering professions for accuracy), Jack Reed and Dan McNellis narrated and performed the show on a portable stage with sound and lighting effects. It told of the atom, what its promise is for peace and then hinted of many of the things that can be done by use of the elements that have been subjected to fission, the radioactive isotopes, in the fields of medicine, agriculture, industry, food preservation and plastics. How it will be used to develop power was graphically illustrated also.

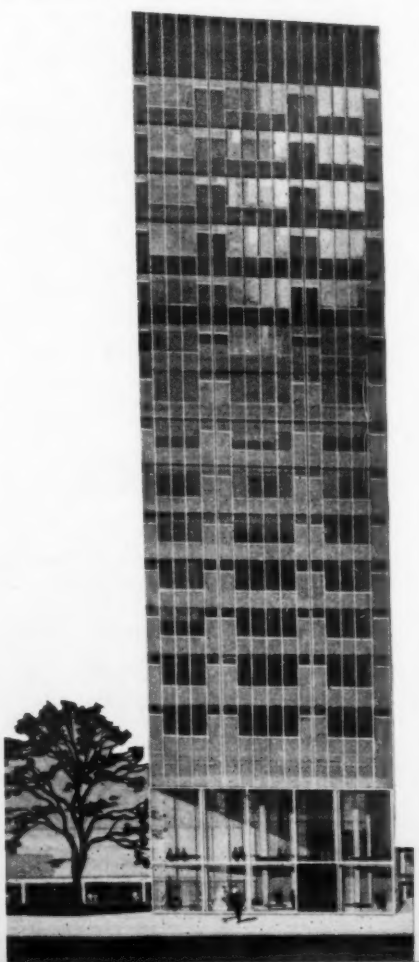
Scope of the Live Better . . . *Electrically* program was presented to the Monday luncheon by R. E. Boian, General Electric Co. In a slide and movie combination presentation, he showed excerpts of *Meet Mrs. Swenson,* a special movie produced for the promotion, and showed how other companies, such as Westinghouse with Betty Furness, were all coordinating their promotional efforts this year in this slogan, not a new one, but one that truly expresses the motives of the industry.

Color television was demonstrated at the social hour Monday evening on the sets of five different makes of receiver and, again, preliminary to the luncheon Tuesday, at which William H. Shelby, district manager, RCA, modestly claimed for his company all of the developments of radio, television and color. To an audience well aware of the contributions of other manufacturers and individuals, this was bad taste. His company's sharing of the use of its tubes and know-how with other set manufacturers would have seemed less patronizing and brought forth more appreciation. Encouraging were his statements that more programming is being planned each year and more equipment is being ordered by the stations to broadcast in color. Promise of tape-recorded programs likewise excited the imagination.

"Why Advertise?"

Guy W. Thomas, another newly appointed vice-president of Public Service of Colorado, presided over the Tuesday afternoon general session, turning it over to Clare G. Henderson of Rippey, Henderson, Kostka & Co. who had assembled a newspaper, a radio and a TV ad man to "shed some light, both on why and how advertise." Henderson prefaced with the thought that the new industrial revolution embodying chemistry and electronics is able to produce so prodigiously that advertising must be used to multiply the ability of the marketing man to sell the product. That complex reactions of people do not lend themselves to precise physical measurements as in engineering should cause industry to spend as much money in marketing research as it does in physical research, he said. The forum's purpose would to be help or reorganize the similarities and differences within the branches of the industry in their needs for advertising.





Newspapers represented by Craig Ramsey of the *Denver Post* described the effectiveness of RMEL "Dryer-a-Day" contest promotions with Public Service Co. of Colorado, dealers, distributors, conducted with the *Post* in 1954 and 1955. A similar program is under way in 1956. These campaigns he showed by the newspaper's consumers surveys had increased the percentage of families owning dryers from 1.2% in 1949 to 16.5% at the end of 1955. Compared to Los Angeles' 5.7, Seattle 11.4, Milwaukee 12.6 and Portland 17% (attributed to the weather), Denver's 16.5% could be chalked up to the cumulative industry-wide effort.

Jack Tipton, while showing that television was one of the major media used by appliance manufacturers to presell, also pointed out the necessity for coordinated local newspaper and radio spot campaigns to direct this preselling into sales.

Radio also is doing better, Robert S. Hicks of KOA told. He described how retailers can combine retail ads with institutional messages. The part that radio plays in creating a definite personality to help sell products was also emphasized.

Housepower, the promotional program on adequate wiring being launched by Edison Electric Institute, was described by James T. Coatsworth, commercial director, a former Denver man. He described the program in detail, pointing to the local action needed to convert the national interest aroused by all the industry's programs.

Wittily and modestly E. W. Seay of Westinghouse, Mansfield, told and showed with film strips how that company is tying in both with the Housepower and Live Better . . . *Electrically* promotions, and especially how it will feature these on its Studio 1 TV commercials and later in the year during its coverage of the political conventions and the national election.

"The Fabulous Atom," educational road show, was previewed by the interested conference

While such necessary functions as billing and collecting are considered the accountant's main interest, the human side of their jobs was well revealed in several talks at the Accounting Section meetings, presided over by Eugene C. Larrabe, Robert M. Gardner and Morris A. Smith. After Otto Heisterberg, Public Service of Colorado, discussed the various methods for duplicating forms and lists, M. J. Bendekovic, PS of Colorado, discussed the handling of claims and its effect on both public and employee relations.

How the claims department requires the understanding and cooperation of other people to get its job done, he told by numerous human examples. The delicate balance that must be maintained for every claim paid as to its effect on gross revenue vs loss in public relations, the need for absolute honesty, accuracy, fair dealing, and without discrimination, politics or personal bias, was made clear. The problem becomes more severe, he said, as the tempo of living has increased and with it costs. This is reflected in litigations and in judgments. The number of claims is increasing because the public is more informed and some things that would have been shugged off before the war are now brought in for claims.

What accumulated depreciation is and how it is applied with respect to the 1954 revenue code was explained by F. N. McClelland, Haskins & Sells. Most questions about the subject can be answered except what the utility commissions will do about it for rate purposes, he pointed out. The Pennsylvania commission has not gone along to allow it and other commissions have been silent up to now.

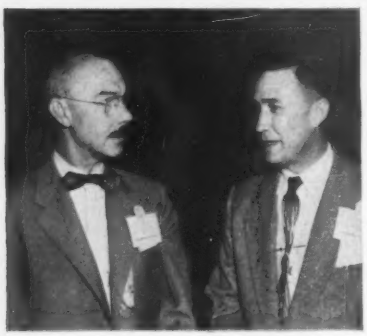
The very human problem of selecting, interviewing and training new employees was discussed with penetration and understanding by Dean Clifford G. Houston, University of of Colorado, Boulder. He told how to interview prospective employees in a relaxed manner and the type of questions and cross checks to use. Following selection, the importance of acquainting the supervisory people with the characteristics of the individual man or woman was emphasized and the indoctrination and training program is a serious one.

He issued a warning that unless the

Growth Factors

COMMERCIAL BUILDING—This is Webb & Knapp's new Court House Square hotel and department store, one of several skyscrapers changing Denver's skyline in recent years. PS of Colo. is busy adding to Cherokee station, pictured, to meet load growth

Robertson PS of Colo. **Mann** A-C **Reader** So. Colo. Power



J. Y. Parce Stearns-Roger **C. R. Huskey** So. Colo. Power

Fred Wiley Colo. Springs **Howard Smith** Colo. Central Power

Floyd Bean Westinghouse **J. K. Howell** Westinghouse

business community of the United States understands what is going on there will not be the engineers and trained college graduates needed for the future. "You can't get good faculties in your colleges for $3,400 a year," he said. "If the businessmen lobby strenuously against budgets, they will have fewer teachers to train the engineers that are going to be so desperately needed. Let's just face it," declared the college dean.

The final session on Tuesday was devoted to round-table type of discussion of bimonthly billing and reading of meters in rural areas. Robert S. Gardner, Southern Colorado Power, described the company's experience as did J. A. Bullock, Western Colorado Power, where the system has been used for some time. Harry Galligan, comptroller, Colorado Springs Municipality, led the credits and collections round table discussion session. The experience of Colorado Central Power and Pacific Power & Light at Casper in estimating final bills and leaving the services hot was told.

"Who's Listening?"

Good question to cover the broad scope of the information committee, presided over by P. J. Kronenberger, Colorado Central Power, was Ken Haines, Public Service of Colorado, topic, "Who's Listening?" Need of a company for a continuing program of advertising and publicity, no matter if that company is a dealer's store, a distributor, a manufacturer or utility, was shown by Haines both by word and slide illustrations and displays. The experience of a company during a strike, where the public was ignorant of its program, policy and record, pointed the danger to assuming that the public knows. He then outlined what an appliance dealer, for example, should tell the public in his advertising and promotion and how to prepare publicity on his company's activities for the press and radio.

D. T. Spangenberg then told in "Do-It-Yourself" how a company story can be told by an employee magazine.

A catch-all department where "everybody's business is nobody's business" is necessary in utility companies, John Kerr, PS of Colorado, maintained and listed some of the responsibilities that should be assigned to a department and not left to chance. Among these are school programs of education, civic drives, donations and gifts, employee education meetings, training for supervision, civic and service organization participation, requests for information from students and teachers, tours and open houses, displays at shows and fairs, and the company speakers. A versatile, simple, yet effective, display that can be adapted to several kinds of messages for fairs was demonstrated quickly during his talk.

Delivering Housepower

It would have been called an adequate wiring meeting in the past, but now the Housepower program and Live Better . . . *Electrically* have given direction to this idea. This was borne out at the Monday afternoon meeting, under Harold Rust, devoted to wiring, home modernization. How to set up an electric modernization bureau was first described by A. A. Roebke of the builders and dealers department, PS of Colorado.

Details of the bureau in Denver (to be covered in a story later) told how the NECA chapter, the league and others had supported it. The organization was started, the RMEL office used as headquarters for lower overhead and clerical assistance, and a sales estimator employed. He is paid a commission from the jobs sold on a contractor basis, not as an employee of the bureau. Financing is offered by three banks. Leads are obtained from utility advertising, coupons, direct mail and lights-out trouble calls. How the work is assigned among 42 contractors without partiality was discussed and results reported for the first three months of the operation. There were 34 jobs sold for a total of $8,140, an average of $226 per job. Of these, three were under $100, 10 between $100 and $200, 14 between $200 and $300, and seven over $300. Sixteen of these were financed, the others were paid for in cash.

Guy Thomas described the Housepower program of EEI and what it would mean in additional advertising. A panel, consisting of Howard Smith, Colorado Central Power Co., Roy Kennedy, electrical contractor, and Leonard Robohm, a dealer in Englewood, presented the respective viewpoints of utility, contractor and dealer. Smith advocated 100-amp minimum services by ordinance.

Appliance Promotions

Three viewpoints on appliance promotions were provided at the Tuesday morning sales and promotion session under John R. Dalsant, chairman.

Where the manufacturer must promote was told by B. E. "Bernie" Colligan, Monarch Range Co., in a lively talk. He described how manufacturers must start a year ahead and have promotions completely laid out

for the entire year. They must be sound, be designed to make money for all concerned. He illustrated with numerous types of campaigns, such as using the user, contests, manufacturers' campaign specials, etc.

The distributor's part in promotions was described by Richard Brown, general manager, Boyd Distributing Co., who is chairman of the RMEL dryer campaign this year. As the middleman between manufacturer and dealer, the distributor requires the cooperation of both. His function is to dispense knowledge of the product by sales meetings. He maintained that manufacturers must give them price leaders to create traffic and it is up to the dealer to sell the customer to a better price and a better profit.

The part that manufacturers and distributors could play to best advantage, said S. Occhipinti, Electrical Center, Cheyenne, would be in better training. Likewise, dealers need better service training to know what is wrong with an appliance after the customer calls him up.

The market and the approach to selling residential air conditioning was presented by A. G. Foote, Frigidaire Sales Corp. factory representative from Dayton. Significantly, he said that there were 34 fewer makes last year than in the previous year and there would be 15 fewer brands to compete in 1956 for a 2,500,000-unit market. Also significant was the National Electrical Code change, he said, to reclassify such units from portable to fixed appliances. He said his company had what it called a "Q-meter" to determine whether a circuit was capable of handling an air conditioner.

The electrical industry's promotions through its various industry and trade organizations were reviewed quickly by James T. Coatsworth, commercial director, EEI, New York. Besides the EEI's eight coordinated campaigns of its residential committee, he mentioned the industrial and commercial lighting, farm wiring, certified lighting and a forthcoming residential lighting program.

Scanning the Engineers

"Economics of 277/480-v wye underground distribution" and "research on ultrahigh-voltage transmission at high altitudes" were the Pikes Peak and Longs Peak of the widespread engineering horizon. Meeting in parallel groups of their own, the engineering committee's power plant section, its transmission substation section and distribution section each had numerous speakers with detailed technical papers on a wide range of subjects.

The power plant group under R. C. Hadley and J. Y. Parce, heard R. F. Price, Stearns-Rogers Mfg. Co., detail a number of factors pertinent to the selection of power supplies for central station auxiliaries. S. F. Smith, Hendrie & Bolthoff Co., presented a paper prepared by H. L. Wagner, vice-president, Detroit Stoker Co., covering the development of the spreader-type stoker and its related components to make it adaptable for successful utilization of Western fuels.

C. R. Huskey, Southern Colorado Power Co., Pueblo, describing the new Canon City plant, said that station power requirements of about 4% of total generation are due in large part to use of a two-speed circulating water pump and dual drive on the induced- and forced-draft fans. The new plant, 20,000 kva capacity, is operated by four men per shift plus two yard men and a maintenance man.

Jim Coatsworth
Edison Electric Institute

E. W. Seay
Westinghouse

Discussing incremental system loading was a panel of three Public Service Co. of Colorado engineers.

Minimum fuel cost results when the incremental delivered cost, that is, generation plus transmission, from each of several steam plants are equal, said W. K. Sutherland. A digital computer is essential in the calculation of "B" constants for loss transmission formulas in an interconnected system, said D. O. Ballinger. That a 3-5% accuracy is satisfactory in a solution of incremental loss for equations was maintained by J. L. McKinley. This accuracy, he said, is as good as that obtained in developing heat rate curves. Need for a simple method to replace basic assumptions regarding such conditions as system power factor, line voltage and rate of load variation was told. Completely automatic economic scheduling of generation will become standard in a few years, McKinley predicted.

Transmission and substation section under Floyd Bean heard outlined by W. R. Treverton and S. C. Class, PS of Colorado, detailed steps for preventive maintenance programs. They concluded that scheduled inspection and tests of major electrical substation equipment are the only means of revealing actual operating conditions. Using these as a backbone, a program of preventive maintenance can be developed that will save many times its own cost in assuring continuity of service and prolonging equipment life.

George D. Perry Jr., Southern Colorado Power Co., described his company's microwave system, installed with carrier-controlled relaying in 1949. The system has two relay channels for the 115-kv tie line and the 69-kv tie line between the Pueblo plant and West station. Two supervisory channels are used for control of the West station and the La Junta substation. W. E. Sutter, General Electric Co., Redwood City, reported that Southern Nevada Power will be

Clair Henderson, standing, and his "Why Advertise?" panel—Ramsey, Hix, Tipton

Luncheon speakers—Ralph Hubbard, RMEL manager; D. B. Hyer, president; R. E. Boian, G-E; W. H. Shelby, RCA; R. D. Moody, A-C

the first to use microwave channel for phase comparison relaying between Clark County steam plant and two outlying switching stations. He told also that the PG and E space diversity reception is provided using two antennas at each end of a 55-mile leg. This will eliminate effects of multipass cancellations. Half of the leg is over San Francisco Bay. He said that the Public Service of Colorado system is an excellent example of using mountain tops for microwave repeater stations.

"Arrester Characteristics Coordinated With Insulation BIL," first presented at District 7 AIEE meeting in Texas, was repeated for the conference by J. K. Howell, Westinghouse Electric Corp., St. Louis. Copies of the paper are available from RMEL.

Economics of a 277/480-v wye underground distribution system were described by Howard S. Smith of Colorado Central Power Co. in the distribution section meeting under Fred Wiley. He said the system offers 12 times the area coverage as that achieved with the 120/240-v secondary with the establishment of one transformer station. The normal area to be served on a 480-v basis in this area would be 12 blocks of approximately 330 x 660 ft. A further extension of the 480-v system to a 20-block area may be developed, if so desired.

Such a system is in its infancy, he concluded. It offers cost advantages over conventional systems to serve underground to customers. He felt that the system should be used if large areas are to be served by single transformer locations. Motors whose sizes are greater than 3 hp should be connected to the 480-v system at the present time. With future National Electrical Code changes and developments in the fixed appliance wall outlet field and developments in the appliance field, the dry-type transformer requirement could be reduced from 10-kva to a 3-kva unit, thus reducing the over-all cost to the consumer.

Cables came up for discussion by Walter J. Plate, Anaconda Wire & Cable Co. Plate remarked that, while present splicing and joining methods are adequate, faster means must be found to hold costs down. He suggested field molding of splices as a solution and said many cable manufacturers are seeking this.

Use of high-voltage rubber and polyethylene cables was also described by R. B. Zane, Okonite Co.

Great interest in Public Service Co. of Colorado's research on ultrahigh-voltage transmission at high altitudes was evident in the attendance on L. M. Robertson's discussion of it. This was in H. E. Reader's substation section.

To find the answers to the unknowns involved, his company, Robertson said, in cooperation with several manufacturers has set up an experimental test line at 10,300-ft elevation near Leadville, Colo., to gather mechanical data on steel towers, two types of H-frame structures; electrical data on single and bundled conductors under severe geographic, topographic and climatic conditions. With present theoretical formulas, it would be necessary to use ACSR conductor more than 2 in. in diameter or two 0.94-in. conductors per phase at altitudes higher than 10,000 ft. It is the hope that smaller conductors can be used, he said. Also studied will be corona loss, radio interference, types of spacers for bundled conductors.

Origin and control of noise in power transformers were discussed by J. R. Mann, Allis-Chalmers Mfg. Co., Milwaukee. He described the technical difficulties in controlling noise and suggested that it would be cheaper for utilities to solve noise problems by use of enclosures and careful location of transformers in the substation site. These factors must be weighed against the premium price of a 15-db below NEMA standard transformer.

Credit for the smooth running of the spring conference was accorded Guy W. Thomas, general chairman, and Kenneth J. Haines for the program for the general sessions, as well as to the individual committee chairmen. Yet back of all was the capable direction of Ralph Hubbard, managing director, and his RMEL staff. Manufacturers and distributor members provided the sociability hour at each of the three evenings prior to the dinners and banquet. Too bad you couldn't make it. Don't miss it next year.—WAC.

M. J. Bendekovic, Eugene Love, Otto Heisterberg, accounting

Adequate wiring—H. Rust, H. Smith, R. Kennedy, L. Robohm

When the facts are understood, the public wants private power to serve them. This is the reason why we should

Tell Our Story Better

R. C. Setterstrom

President, Northwest Electric Light & Power Assn.

NELPA's president speaks . . .

A grandmother asked her teen-age granddaughter, "Will you promise me not to use two words, one is swell and the other is lousy?"

"Sure I will promise you, grandma. What are the words?"

Is the electrical industry unwittingly failing to get its messages across to the public? People quite naturally hesitate to express their lack of understanding so they carry with them whatever interpretation they first gain. My oldest daughter frequently brought me to a halt when I told her about things by asking, "Is that good or bad, daddy?" I had failed to make my point clear.

I am sure that the people would be overwhelmingly in favor of private power today if they really understood how investor-owned utilities operate. This is not wishful thinking but rather is based upon my visits and experiences with people in all walks of life. In a democracy, each person's vote counts equally and it is important that we make every effort to correctly inform everybody about our business. This is easier said than done.

There always will be a few people who do not like a monopoly type of business, or big business or even small business. Their dislikes may even have been handed down to them for generations, just like religion or political beliefs. And it is not my intention to suggest that all people should conform to the thinking of the majority. The rapid progress of the electrical industry is in no small measure due to nonconformists with courage to buck the trend.

However, it is wise to be sympathetic to those who disagree with you. If their intentions are honest, you will in all probability discover that the disagreement is through lack of correct knowledge or facts. By mutually discovering your areas of agreement, you develop mutual understanding and make a friend instead of an enemy. In the utility business, I would rather avoid making one enemy than making a hundred friends, because one enemy can cause more trouble than a hundred friends can counteract.

Reflecting back on the past year, free enterprise made substantial progress in the Northwest. The following paragraph is from my article in the June 1955 issue of ELECTRICAL WEST:

"It is said that adversity builds character. The fact that the private power companies of the Northwest are strong, fast-growing organizations today bears out this statement. To me, it proves two things: first, *the public wants private power to serve them,* and, second, the men of vision who are guiding the destinies of these companies had the intestinal fortitude to fight because they know that private power must succeed if we are to continue as a free enterprise nation where we all enjoy greater individual liberty than any people on earth. I would like to pay tribute to all of these great leaders who have so valiantly fought our battles for so many years."

The phrase "the public wants private power to serve them" was my expressed opinion at that time. Would a 72% vote in favor of private power confirm that opinion? I think so.

Yes, the people of Stevens County, Wash., voted 72% in favor of selling their Public Utility District property to the Washington Water Power Co. in November 1955.

It required a 60% favorable vote and not a mere majority to win this election for the Washington Water Power Co. Some people said it was taking a big chance but Kinsey Robinson, who is one of those leaders with the "intestinal fortitude" referred to above, was confident of how the people would vote when they learned the facts. He made sure that it was a well-informed people who went to the polls.

The Northwest utilities are proceeding with substantial hydroelectric projects to insure adequate service for their customers. At the beginning of the year California Oregon Power, Idaho Power, Portland General Electric, British Columbia Electric and Washington Water Power companies had hydroelectric projects totaling more than a million kilowatts under construction.

A handful of public power advocates are still dying hard on projects such as Idaho Power's Brownlee project on the Snake River. Tom Roach, Idaho Power president, and his hard-hitting organization are doing an outstanding job of informing the public of the facts relative to this and other projects on that great river.

Of great importance to Montana Power and its customers was the recent granting of 50-year FPC licenses with 1948 starting dates for seven hydroelectric plants and one storage reservoir on the Missouri and Madison Rivers. Also granted was a 50-year Federal Power Commission license for the 60,000-kw Cochrane plant on the Missouri River near Great Falls. Construction will begin immediately to insure adequate power at all times.

Private power companies in the Northwest are staying ahead of the power requirements of their customers, they are rendering good service and they are good neighbors wherever they serve. The annual meeting of the Northwest Electric Light & Power Assn. in Spokane last November was attended by top executives of all utility members. Their reports of proposed expansion to meet their rapidly growing loads was an unqualified expression of their faith in the future of private power in the Northwest.

It will be worth your time to read the article on p 139 of the April 21, 1956, issue of *Business Week.* It tells a most interesting story about how a high school teacher in Portland, Maine, gave his students a down-to-earth education on American business. We need more of this type of approach to inform people about our highly technical utility operations.

"Live right and be understood" is one simple definition for public relations. We, in the utility business in the Northwest, are more seriously than ever "living right" by rendering adequate, excellent and courteous service at reasonable cost. We must make a much greater effort to be "understood" by all of the people in all walks of life.

DeWitt Pike, Rochester G&E, Business Development Chairman Kimball Jack, WWP, Personnel Chairman Russell James, PGE. Pike used flannel board in his talk on communications

G-E's K. G. Roe illustrates a point—women don't like ice cream to get soft in carton

In Sales, Personnel and Safety

NELPA Looks to the Future

With the much heralded natural gas due shortly in a large section of the Northwest and a first-quarter business slump in some areas, the time was never better for a meeting of minds among those concerned with sales and public relations. Just such a meeting was provided in the Northwest Electric Light & Power Assn.'s conference of Business Development, Personnel and Safety Sections at Seattle, May 21-23. Some 230, largest registration since 1947, attended the sessions, arranged by bureau and committee heads under Business Development Chairman Kimball Jack, Washington Water Power, Co-chairman A. S. Gilbert, Idaho Power, and Personnel Chairman Russell B. James, Portland General Electric.

Host Frank McLaughlin of Puget Power, John Kimball, NELPA's 2nd vice-president

Although opinions differed on methods of meeting the new competition and getting an increased share of the consumer dollar, there was general agreement on basic questions. The industry has a good product to sell but it must sell up and sell hard. It must dramatize its story and must implement at the local level national programs such as Housepower and Live Better . . . *Electrically*. All segments are interdependent and must work together with the utilities taking their full share as coordinators. Manpower must be recruited and trained.

While competition from natural gas was uppermost in everyone's mind, the tone was one of awareness, not of worry. There was a tendency to re-evaluate programs and to profit from the experience of those already living (and prospering) under stiff competition.

Competition, everybody agreed, can be good for business. Where everybody didn't agree was on how to get around some of the bottlenecks to increased use of electricity—wiring costs for instance. The question of whether or not the utility should help out with subsidies found the members in different camps, depending upon management policy, past experience, local situations. However, there was a general willingness to listen, to share experience and to take home new ideas.

At this meeting the industry could not be accused of "talking to itself" or, if it was, it was pretty straight talk. One section heard a builder call it complaisant. The same section that had invited him to tell how the utility could help him had asked a dealer and a contractor to do the same.

A report of this kind cannot begin to detail the wealth of information in a program that was exceptionally well prepared and executed. It can only present a few highlights to indicate thinking trends. Great credit is due the chairmen and the host company, Puget Sound Power & Light. Details ran smoothly under direction of General Chairman Clarence Scheyer, assisted by H. E. Klein, treasurer and registrar; L. C. McIver, general arrangements

and properties; Joseph C. Platt, manufacturer-distributor entertainment; Edith Rauch, ladies entertainment; H. P. Forman, publicity.

Entertainment highlights were the Monday luncheon for the ladies and the Paul Bunyon cocktail parties and banquet program provided by the manufacturers and distributors. A movie filmed during the conference was shown to a capacity audience Wednesday morning.

General Session

Greeting the delegates as "apostles of 'Live Better . . . *Electrically*'," Frank McLaughlin, president of Puget Sound Power & Light Co., told the opening session that the key to industry growth and well-being is people. Today's team cannot be expected to win tomorrow's game and the dominant problem throughout major industry today is the shortage of manpower talent, he declared. We must scrape our barrels for talent and see that it is properly trained. There must be no "square pegs in round holes." Stop watches and roadblocks must be eliminated from key jobs.

Speaking directly to Business Development people, he called for aggressive merchandising of our "miracle" product and warned that loadbuilding programs must be soundly premised to create adequate increased net income from added revenues. "If you are going to give the company away, we don't need you or a sales department," he quoted from a former boss.

Although the presidents of the other member companies could not be present, their portraits hung behind the podium and Chairman Jack read a message from each of them.

We are at a checking up point; must look with the face of Janus both forward and backward, John T. Kimball, vice-president and general manager of Idaho Power Co. and second vice-president of the association, stated in his response. "Live Better . . . *Electrically*" is something we have known all along but the theme now is dramatic and inspiring, he indicated.

Everything of any consequence that has happened in America during the past 75 years has been because of or in terms of electricity; whatever the next 25 years have in store (and it will be overwhelming in human welfare) will be because of the great contributions made by electricity or some substitute brought to us by the nuclear age. There is only one thing more important than electric power and that is manpower, he declared.

He urged the industry to fight further government encroachment at all levels; consolidate its position with the public; lift itself in manpower by the bootstraps. "Let's ferret out those that have what it takes to get ahead, put them out in the field with the ball and let them run with it."

Management has a selling job to do and it must step up that job, DeWitt Pike, superintendent of employee relations, Rochester Gas & Electric Co., told the group. Today we must sell not only electric service but our way of doing business.

There is little hope that we can find a simple formula to make men do better work, he said, but it is difficult to imagine that effective communication can be separated from this efficiency. Cost of good communications is higher than is commonly supposed because the process, though simple, demands the finest skills. But if we fail to develop them, the cost may well be greater than we can measure, he reminded.

"Let's build up the load we already have," urged K. G. Roe, General Electric Co. Refrigeration Division, in a plea for saturated items. That is the easiest and most profitable thing salesmen can do, he contended in a luncheon talk that was packed with action and humor. A certain number of people are going to buy a new refrigerator this year; sell them a combination instead and do it now before they buy a single unit and the extra load is lost for another 13 years, he advised.

Supervisors should be selected for their ability to lead rather than to command, Lawrence L. German, public relations director at G-E's Hanford plant, stated in a luncheon talk on the middleman in management. He cited responsibilities of the supervisor to his people, his boss and to himself.

That the electrical industry's service is special because it makes all other services possible and practical was brought out in Wednesday's luncheon talk by Frank Drake Davidson, North Bend, Wash.

At Tuesday's luncheon, John Kimball took over the microphone to give tribute to Berkeley Snow, the association's executive manager, who will retire soon. Kimball's remarks and Snow's response were greeted with heartfelt applause.

Fears of some that the panel discussion scheduled for Wednesday morning would be just a "rehash" of section reports were not justified. Ably led by Kim Jack and the substitute he chose from the audience, Paul Ousley, Dan Kamphausen Co., the panel brought out some very pertinent questions. While panel members were frank, some of the questions did not permit immediate answer. However they gave everybody some things to think about. A few: "Do you believe your salesmen are trying to spread themselves too thin; do you pay them enough? Are you spending enough money on advertising? In selling private enterprise are you getting enough help from salesmen? Are we talking jargon? Are rate men egg heads?

A. S. Gilbert will succeed Jack as chairman of the Business Development Section. Clarence Scheyer will be vice-chairman. Victoria, B. C., was selected

Electric Home Bureau Chairman Frank Tool, WWP; Co-chairmen Edith Rauch, PSP&L, Wes Dunn, PP&L. Commercial & Industrial Chairman Wayne Shaw, UP&L; Co-chairmen Leo Collins, PGE, C. A. Scheyer, PSP&L, arrangements chairman

General Chairman Kim Jack and A. S. Gilbert, Idaho Power, co-chairman, Business Development Section

Farm Bureau Chairman T. K. Dimmitt, PSP&L (center); Co-chairmen Rich Bakes, Washington Water Power (left); Leonard Regan, Montana Power

for the section's '57 conference city.

Wallace E. Gordon, PGE, succeeds James as Personnel Section chairman. Joe Bradshaw, PSP&L, will head the Safety Section.

Commercial & Industrial

"The market is available. All we have to do is to get out and sell it—up, not down." That was the conviction of Commercial and Industrial men who took part in the sessions arranged by Wayne Shaw, UP&L, chairman, and assistants, Clarence Scheyer, PSP&L, and Leo Collins, PGE.

To sell electric heat we must raise our sights; must see a package and sell it, Ted Kinney, Western Factors, Seattle, told the group. We must sell better equipment, especially in controls, and good insulation should be sold with each job. "Do not sell 2x4's to build a railroad trestle," he urged.

"If it's done electrically, it's right," declared Sidney N. Coates, Coates Electric, Seattle, who spoke on electric water heating and commercial steam boilers. Sell the best, he suggested; anything at half the price will do one-half the job. Sell advantages, not costs, he said. The operating cost of electric water heaters or accurate steam boilers is not the determining factor. Such things as control, safety, need for less insurance, space saving make the sale, he pointed out. Utility people can cooperate in making sales, he said.

Pointing out that the pattern of industrial electrification is continuing upward and that by 1964 it is believed that well over 90% of the nation's manufacturing horsepower will be electric, Dwight E. Moorhead, manager, San Jose, Calif., motor plant, General Electric Co., declared that the trend to automation is and will be a key factor in this growth. The typical, not the luxury, home of the 1960s will be equipped with appliances employing at least 25 electric motors, he said.

Progress toward greater mechanization and automation is in the best interests of all the groups that business must serve, customers, shareowners, employees, suppliers and the public, Moorhead said. Automation is built on step-by-step upgrading of our manufacturing operations and people.

Fifty per cent of the power generated nationally goes for commercial and industrial lighting (38% for commercial and 12% for industrial), P. W. Smith, Westinghouse lighting engineer, Salt Lake City, told the group. The market today is in modernization, not new construction, and it's a $9,000,000 market. It will bring $1,000,000 in new revenue by 1965.

Forty-five per cent of all heat pump sales are to commercial and industrial customers, according to P. F. O'Neill, General Electric Air Conditioning Division, Bloomfield, N. J. Industrial customers constitute the biggest market in the Northwest, he said. The heat pump is going through the same cycle as the refrigerator, he said. Later we will wonder how we did without it, particularly air conditioning.

To sell electric commercial cooking, we must have a program, Dean Skall, Hotpoint Co., declared. First, we should make a survey and from that we can shape our activities, he said. Ninety per cent of the equipment in the area's eating establishments is now electric, he brought out, and there is need of utility manpower assigned to this specific duty.

Preselling is important so that customers will ask dealers for electric equipment. Replacement of old electric equipment is a good market and will stop gas replacements, he stated. Teach advantages of electric cooking to dealers, he urged.

Kimball leads the applause for Berk Snow

Electric Home

Need to work with all segments of the industry in the selling job ahead was brought out in the Electric Home Bureau meetings arranged by Chairman Frank Tool, WWP, and co-chairmen, Edith Rauch, PSP&L, and Wesley Dunn, PP&L.

Since its office is the only common meeting ground, the utility can be a balance wheel for the industry, S. C. Haddock, Moscow, Idaho, dealer believes. He told how league thinking and doing has replaced the old "everybody for himself" idea in his area. Illness prevented Haddock from attending the meeting but his paper was ably presented by Wes Dunn.

While industrial and commercial lighting have made tremendous strides during the past 10 years, home lighting has been pushed into the background, more or less, Roger Delander, Sylvania Electric, Seattle, pointed out. There are advantages to the entire industry in correcting this trend. Utilities stand to gain a great deal and should have lighting departments with trained personnel.

Yard lighting for outdoor living can be a plus business on present meters or a factor in larger consumption in new construction, Kenneth Dean, G-E

Lamp Division, Seattle, reminded the group. Average number of sockets outdoors is three and this can be raised significantly, he said.

Management expects the same things from the home service department as it does from the sales department, Wes Dunn said in reporting returns from a questionnaire to member companies. While the department has specific problems, it can and does fit into the over-all sales program.

Dunn's talk introduced a session on home service, which detailed specific programs. Edith Rauch told of Puget Power's outstandingly successful cooking schools; Anne Ogden, PGE, described Portland's school program; Dorothy Smith, WWP, backed up with facts her contention that home service sells economically.

In a straight-from-the-shoulder talk, Dan Narodick, Hebb & Narodick Construction Co., Seattle, accused the utilities of complacency and failure to help the builder. "We have gone to you for favors; you have not come to us," he said. Get some people out to help us, he urged. Keep your foothold, don't let anybody else get in. Any money you spend in helping the builders won't cost you money; it will make money, he declared.

The case for quick recovery water heaters was presented by W. A. Lowry, WWP. Pointing out that it will compete favorably with any competitive water heater and without a subsidy; that initial cost and operating costs are competitive; that there was no adverse effect on WWP's system, he declared that whether the quick recovery water heater is accepted as a weapon against gas competition or because of its sales advantages, the utility will win.

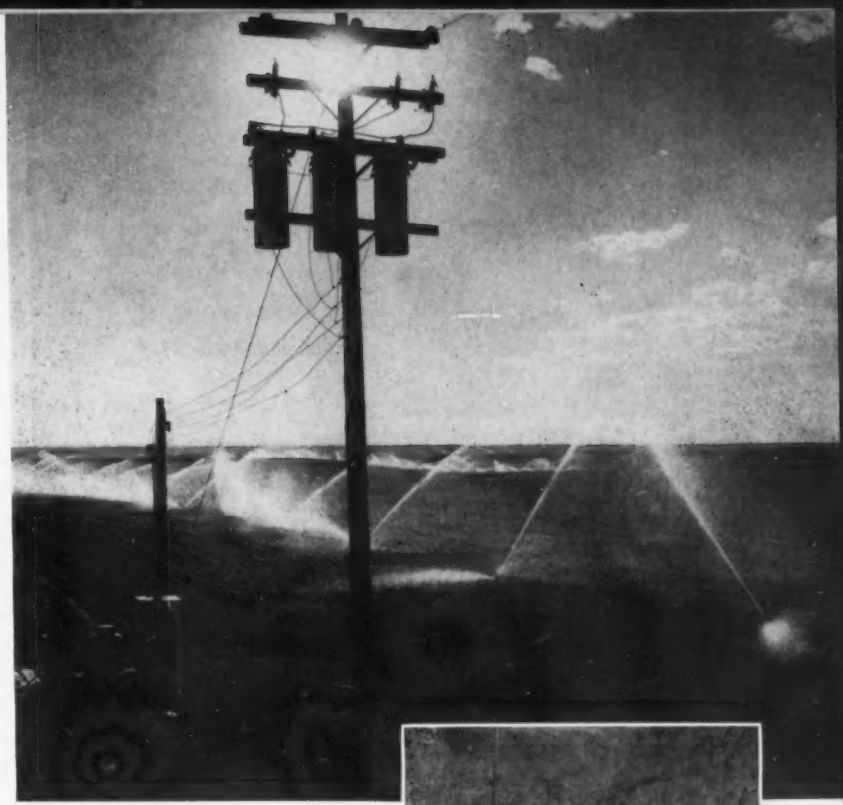
Pointing out that competition is good for business, O. J. Harrom, Montana Power, advised the group to "sell your appliances and your companies." If you do you will find that your competition will have hard sledding. Electricity, he reminded, has many advantages. He warned against counting on fallacious stories about gas; gave useful facts and figures.

Most of Tuesday afternoon was devoted to wiring. You can have the finest product or service in the world and without means of transportation to the point of end use, nothing happens, J. H. Taylor, BCE, declared. "Get ahold of your traffic manager, better known as the adequate wiring promotion representative, and help him for he has a king-size job to do."

Admitting that he doesn't know how the industry is to get the appliance dealer to tell and sell the complete electric story, William Tate, PGE, suggested that until we find the answer, wiring financing can help with a partial solution. Let's make it easy to sell, he urged.

Granting that the cost of wiring is becoming burdensome, Gordon F. DeFoe, WWP, said there are two simple solutions: a utility subsidy or a simplified method of wiring. Pointing to the time required to offset the subsidy, he told of his company's promotion of Miracle Cable, a service entrance cable rated at 115 amp. Used with a low-priced meter socket, rated at about 125 amp, this cable is partially solving the wiring bottleneck.

For the first time something is being done about the wiring bottleneck, R. L. Wilkinson, manager, Inland Empire Chapter, NECA, pointed out. The customer wants a positive approach, he said. Fear psychology is no good because 95% of homeowners recognize the dangers in poor wiring. The public must be convinced that rewiring isn't something to be ashamed of; that there is no stupidity connected with it; that it's necessary to modernize wiring every so many years, it's like buying a new car.



Growth Factors

AGRICULTURE — Irrigation pumping, long an important growth factor with Far Western utilities, is taking on added importance with the rapid growth of sprinkler irrigation. Here is an Idaho farm, one of many that comprise the 356,031 acres that are under sprinkler irrigation, using 4,208 pumps having a connected load of 135,059 hp. To serve this, and other growing loads, Idaho Power Co. needs additional power. Insert shows diversion tunnel being driven for the new 360,000-kw Brownlee plant

Rural and Farm

"Idea exchange" is the term that best describes the Farm Bureau sessions. Representatives of member companies presented highlights of individual programs and told the reasons for them. Chairman Karl Dimmitt, Puget Power, and Rich Bakes, WWP, assistant chairman, were moderators.

Presenting the programs, in addition to Dimmitt and Bakes, were Leonard Regan, Montana Power; Frank Markiness, PGE; James McCarthy, BCE; William Salmon, PP&L; D. A. Runyard, Copco; Preston Mortimer, Idaho Power.

Howard Arnett, PGE, talks on organization. W. E. Gordon, PGE, is sitting at the left

Joe Platt, manufacturer-distributor entertainment chairman; Fred Groch, PGE, chairman of the Rate Research Committee

Joint sessions were held by the Farm Bureau with the Electric Home Bureau (on residential and outdoor lighting) and with the Advertising and Publicity Committee (on more effective farm advertising).

In a Tuesday afternoon session, H. D. "Tink" Smith, R. M. Wade & Co., Portland, and Hal Power, Polson Implement Co., Seattle, told the bureau that the farmer is depending more and more on mechanization and large-volume production to beat lower prices and rising costs.

In summarizing the meeting, Chairman Dimmitt stated that, although farm programs vary considerably with geographical location, customer density and types of farming, each member company, in its own way, is doing an effective job of achieving the common goal—increased use of electricity and improved customer relations.

Rate Research

A single rate to cover all electrical services was proposed at the Rate meeting, chairmanned by Fred Groch, PGE. The suggestion for a universal rate came out of a study recently completed. Findings were given to rate men of the member companies to go over in detail. While it was not suggested that such a move is feasible now, the report showed that rate men are looking to the future.

Advisability of postage stamp rates also was discussed by the group. The question of postage stamp vs zone rates seems to depend on individual systems.

That wash day is no longer Monday was agreed. But whether or not quick recovery water heaters are the answer to the problem of holding water heating load was of interest to the entire group. Three of the companies accept their use; the others generally do not and wanted facts to go on. It was pointed out that in Utah, where electric rates are double gas rates, water heater saturation is 27%.

Advertising & Publicity

Shirt-sleeve sessions as a group and with the bureaus were held by the Advertising and Publicity Committee, headed by Fred Kempe, PGE. The committee from now on will be known as the Public Relations and Advertising Committee, a designation that better describes its function.

Personnel and Safety in Working Session

"It was one of the most practical, down-to-earth working conferences that the association has ever had." That was the way one member summed up NELPA's Personnel and Safety Section meetings, which were held jointly with the Business Development Section and in its own parallel sessions. And it was the consensus if one can judge by overflow attendance and by the fact that interest held up through the finish Wednesday afternoon.

Trend of the discussion showed that personnel men are well aware of two needs—proper training of young executives coming up through the organization and new blood, particularly in the technical fields.

Highlights from the joint sessions with the sales group were given earlier in this report. Here are a few from the parallel sessions.

Costs of fringe benefits were studied at Monday luncheon in a discussion that gave each company an opportunity to see how it stacked up with the others. While salary scales are much the same, fringe benefits—and their costs—vary from company to company.

Implications and future of so-called right-to-work laws were discussed by Olin Ririe of Utah P&L, and L. B. Jack of BCE Co. Eighteen states (of which Utah was the only one represented) have these laws, which provide that right to work shall not be denied because of membership or nonmembership in a labor union. Utah's law, which has been in effect since May

D. M. Prichett, California-Pacific, co-chairman of the Personnel Section; Russell James, PGE, chairman; Professor Charles Dalziel, UC; Safety Chairman Claude Haggard, Copco; Major R. D. Rutherford; L. L. German, General Electric Hanford Works

1955, also includes all private associations.

Ririe pointed out that, under present conditions, the laws are necessary to labor-management controls. These laws have not upset economies in states that have them, he pointed out.

Jack took up the union objection that right-to-work laws are harmful to union security. Although he pointed to the fallacies in this reasoning, he brought out that, to the extent unions feel they are insecure, then start hitting back and getting tough, employers may be losers.

Basic concepts of the Reserve Forces Act of 1955 were covered by Major R. D. Rutherford, U. S. Army Reserve Coordinator. The entire reserve program is going to have a greater impact on American life and industry as time goes on, he stated. After August 1957 all personnel returning from active duty will be required to participate in active reserve training. He emphasized the need for an adequate reserve in being—not a paper organization. Because of the number involved, careful planning is required on the part of industry and the armed forces, he stated. He recommended two publications: Re-employment Rights Handbook and Field Letter Number 17, Feb. 10, 1956, both available from the Department of Labor.

Human relations are about equal parts "leadership" and "followship," W. E. Gordon, PGE, brought out in a session conducted with R. H. Sessions, Idaho Power. Working effectively with others involves attitude, point of view—yours and the other fellow's, outlook or frame of mind, it was brought out.

Dealing with human relations as regards organized groups, Gordon advised working through not around the union. It makes sense, he believes, to get to know the union representatives on a first-name basis and on a social basis.

Importance of setting up the organization chart following proper lines of authority between top management and line and staff personnel was brought out by Howard Arnett, PGE, in one of the best attended parallel sessions. As illustrations, he used slides of the organization charts of member companies.

Training supervisors in uniform contract interpretation was discussed in a panel headed by C. H. Campbell, PP&L, and A. L. Pollard, Puget Power.

Peter Piper, WWP, described the Gilbert-Piper Contract Analysis. This volume breaks down contracts of five member companies into headings that were agreed to be general. In it can be found the practices of any of the five regarding cost items. It is believed to be a form of life insurance, a good tool to have when sitting at the bargaining table. The unions are better implemented with facts, Piper said. In lots of settlements, a penny is a large part, he reminded.

He recalled that a recent survey found seven common qualities in 100 companies having industrial peace. These had to do with mutual respect and trust, strength and responsibility of both parties. The last two were: "management discusses everyday problems with the union, not abstract ideas or reasonings"; "in every case the company places emphasis on consultation and information sharing."

Safety Workshop

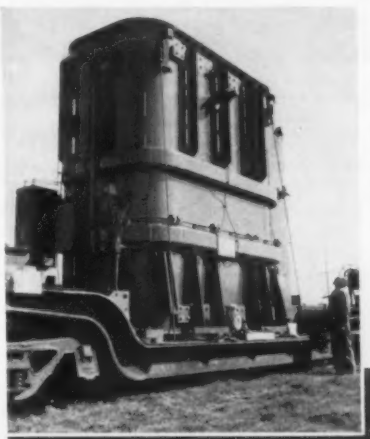
The Safety Section, in the form of a workshop, was one of the best attended in several years, with all but one member company represented. Chairman was C. C. Haggard, Copco. Where the subject was of interest to personnel as well as safety men, the meeting was joint.

Ray White, PG and E, present chairman of EEI's Accident Prevention Section, got the meeting off to a good start with his presentation of "Third Party Accidents." This subject dealt primarily with public contacts with the industry's overhead lines and PG and E's effective program of public education. The recently revised program has resulted in a decrease of nearly 50% in accidents involving overhead lines.

With judgments running as high as $350,000, public electric contact accidents are becoming a very serious problem to the industry. The PG and E program uses a sound slide film, "Look Up And Live," made on its property by a commercial firm. In addition leaflets telling the dangers of overhead line contacts are distributed throughout the system to those handling mobile equipment that can contact power lines.

Reviewing accident statistics of member companies, Roy Elfstrom, BCE, said that both frequency and severity rates show a slight increase over the previous year. This was attrib-

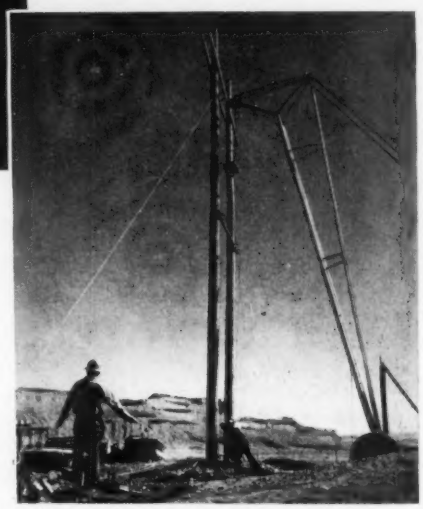
Growth Factors



INDUSTRY—Two new oil refineries near Bellingham, Wash., one of which is the Shell Oil Co. installation shown, are among the latest Western industrial plants to be built. More than a million people settling in the West each year create markets calling for new industries. Power systems must spend millions for new equipment such as this power transformer for Puget Sound Power & Light Co. Industrial expansion—one of the biggest growth factors in the Far West—requires a large proportion of the 2,500,000 kw of new plant capacity and related equipment each year

Growth Factors

MINING—Since the days of the gold rush, mining has been a prime factor in the economy of the West. Gold, silver, lead, zinc, coal and very importantly, copper, have constituted major mining operations in the past. In recent years, development of iron ore reserves and discovery of how to coke Western coals have made the West an important steel producing region. More recently has been the spectacular uranium boom centered largely around Moab, Utah. The large photo shows a uranium miner working his own claim. Now carefully planned and well-equipped operations prevail. For refining the uranium, a large milling operation has been set up at Moab. To serve this, Utah Power & Light Co. built a 138-kv, 108-mile line. In Arizona an immense ore body of copper is being developed; in Oregon 75,000 kw is going into nickel production. Using well over a million kilowatts of power, mining is an important Western growth factor



uted to increased construction. He told how to use visual aids effectively in accident prevention.

There is a tendency among Northwest companies to develop more complete physical examinations, particularly for proper placement of employees and reduction of accidents caused by physical defects. This was brought out by Roland Blantz, PGE, in a talk covering medical examinations. He dealt with pre-employment and periodic examinations and those for change in work classification.

Joe Bradshaw, Puget Power, stressed the importance of basing safe working practices on facts that are obtained through complete and unbiased accident investigations.

Grounding practices were well handled by Eldon Beck, Idaho Power, senior safety representative of the Northwest companies. He told results of some of the studies that have been made by EEI, both from the standpoint of permanent grounds on overhead structures and use of shorts and ground for protection of linemen. He emphasized the need for close liaison with engineering so that overhead structures may be designed for maximum climbing space and freedom from ground contacts when a workman is exposed to possible contact with energized conductors.

Beck's untiring efforts on grounding have contributed to the industry. Most companies are now accepting the practice of shooting and grounding at the point of work instead of on each side, it was brought out. A phrase that he coined, "If it isn't shorted and grounded, it isn't dead," is now well accepted.

Wayne Anderson, Idaho Power, a newcomer to the safety field, gave a paper on rubber protective equipment, its proper testing, storage and use. He stressed the need to realize limitations of rubber because of the corona cutting at higher voltages and importance of proper visual inspection in the field as well as electrical testing in the lab. He brought the members up to date on the new Hypalong corona resistant blankets and line hose that are being field tested by several companies.

Although most of the industry's fatal and serious accidents result from electric contact, the traffic accident problem is increasing, according to Herb Yates, WWP. This may one day be one of the most serious problems, he pointed out. Importance of driver selection and training and the opportunity the industry has to improve public relations by better driving were brought out.

A highlight of the Safety and Personnel joint meeting was a presentation by Charles F. Dalziel, professor of electrical engineering, University of California. He gave an illustrated talk covering many of the experiments he has conducted on the effect of electric shock on the human body. With fatal accidents from all causes in the United States approaching 100,000 a year, electric shock is responsible for approximately 1,100, about one quarter of them caused by lightning. Although the industry has reason to be proud of this record, there is need for a continuous public education program, section members feel.

Code panel at Boise—Park Forte, Cliff Atkins, Charles Smith, Les Johnson, Clyde Hicks

Charles Davis turns chair to A. H. Gates

Inspectors Make Spring Rounds

What is an inspector's problem in one part of the West may not be in another. While this may not be evident to the local inspector or contractor who attended any single one of the series of chapter meetings during the past two months of the International Association of Electrical Inspectors, it is when they are compared as to discussions and interests.

The meetings usually are held in series in the spring in order that Charles L. Smith, IAEI secretary-treasurer from Chicago, can route a tour of the West and attend as many as possible. This was a custom of the late Victor Tousley, especially for the mountain states. They held their annual chapter meetings and elections of officers at that time.

Smith attended six this year, regretfully had to cancel the Northwest states of Oregon, Washington and Montana because of urgent NFPA business in the east. He is also field secretary for NFPA and secretary of the coordinating committee for the National Electrical Code.

These meetings are not conventions in the strict sense nor do they supplant the Southwestern or Northwestern Section conferences, usually held in September. However, they do reflect the thinking of inspectors in regard to the code. Likewise, they bring up installation and safety problems, some of them unique to their own areas.

This year, the IAEI had its own problem in two chapters. The Southern California Chapter had threatened to withdraw from IAEI over the handling of the presidency of H. G. Ufer. The Utah Chapter, last year, had passed a resolution of protest that no national officers had attended its annual meeting. There was peace to be made in both instances.

Arizona Chapter

First of the series this year was held by Arizona Chapter, April 5, as a special dinner meeting in Phoenix. There was a record attendance and an excellent code discussion.

Because Herbert Ufer had been the initiator of the Arizona Chapter and is looked upon fondly as its founder, Smith explained the constitutional reasons why Ufer had been asked to turn over the presidency to an active inspector.

The code discussion panel was headed by Smith and included H. H. Dinwiddie and G. Kiger of Phoenix inspection department, and F. C. Jones, Arizona Fire Rating Bureau. The two main subjects were recessed lighting fixtures and proper installation methods for them; the second topic was a proposed 2-in. space between the ceiling and fluorescent fixtures, which normally would be surface mounted. In a warm atmosphere, complaints of heating from surface-mounted fixtures have been growing and many proposed local rules to require the air space for heat dissipation.

Charles Smith, NW President Cliff Atkins

Arizona Chapter's regular meeting was scheduled for May 12 and a report of it has not yet been received. At this one, the new officers for the year were to be elected. The Live Beter . . . *Electrically* program was likewise to be presented to the inspectors.

Southern California Chapter

Holding its annual once-a-year meeting in San Diego, the Southern California Chapter, IAEI, met again at Kona Kai Club April 11 with Arthur Vesco, San Diego electrical inspector, as chairman and an attendance of 51.

Here Smith faced the rebellious chapter, which had voted to withdraw from IAEI. A discussion of all aspects involved seemed to clear the matter. Smith explained the action taken and expressed regret that he had had to take it. No further steps were taken on the previous motion.

Code discussion at this meeting was limited for lack of time. The major question raised was relative to the proper type of wire to use between ballasts and fluorescent or slimline lamps, where the ballasts are remote from the fixtures. A 75 C wire with a braid was said to be suitable, even

Utah Officers W. T. Hawes, A. H. Bywater, E. R. Anderson, N. Hall, L. M. Christensen

where used in contact with the ballasts. An RH10 with a 75 C insulation and 1,000-v insulation was considered suitable for the wiring from the high side of the ballasts to the lamps.

Contributing to the educational features of the program were Don Shiveley, Allied Industries, who demonstrated the use of the Remcon low-voltage switching devices and explained their construction. Ed Osborne, Thomas & Betts Co., described electric metallic tubing installations, using insulated and noninsulated throat connectors.

Charles Armstrong of the State Division of Housing announced that public hearings on trailer park wiring standards would be held May 23. E. E. Carlton, Division of Industrial Safety, told of the plans for the Southwestern Section annual conference in Berkeley Sept. 17-19.

Joint Meeting, Three Chapters

Date for the usual annual three-chapter joint meeting of the Northern California, Central California and Sacramento Valley Chapters was advanced to April 14 in order to coincide with Smith's schedule. The meeting was held in the PG and E building, Fresno, each of the three chairmen taking turns at presiding. Charles Pierce, Central California Chapter, Rafael Ochoa Jr. of the Sacramento Valley Chapter and Pat O'Leary, Northern California Chapter, each dispensed with the minutes of the previous meeting.

Smith again described the situation that had arisen over Herb Ufer's resignation, stating he felt very badly about it, and admitting that the previous national president had likewise been illegally in office after retirement.

Smith also discussed some of the changes in the forthcoming 1956 National Electrical Code, due to be printed in September, using the old format. The new format and arrangement cannot be used until the 1959 edition, he explained. In the general discussion, Pat O'Leary, Berkeley city inspector, said that 80% of electric fires in that city came from equipment and apparatus rather than the wiring. It was felt that steps are needed to control such hazards more effectively. More inspectors may be needed and their efforts spent in inspection rather than in fee collection.

In the question-and-answer session, both perennial subjects — grounding and wiring of separate range tops and ovens—came up. Smith warned that the drawing on the cover of the March 1956 *New-Bulletin* was not to be followed as a means of connecting ranges of that kind. As explained inside, there were errors in such an installation.

John Shaddle, Palo Alto inspector, described substandard nonmetallic sheathed cable, apparently imported from some foreign country, not listed by UL, with wires nearer a No. 16 than a No. 14. Inspectors were warned to be on the watch for such material. James Ambrosi, Oakland, Southwestern Section president, announced plans for the Southwestern Section annual meeting in Berkeley in September. E. I. Osborne, Thomas & Betts Co., demonstrated new insulated fittings for standard wiring materials. There were some 60 present at this meeting.

Utah Chapter

Saving its strength for the September annual meeting of the Northwestern Section, which will be held in Salt Lake City Sept. 10-12 for which it will be host, Utah Chapter of IAEI went lightly on its spring meeting April 17. A noon luncheon for Charles L. Smith, IAEI secretary-treasurer, Chicago, and an hour and a half evening session instead of an all-day session were all this year.

At the noon luncheon Mayor Adiel F. Stewart, Salt Lake City, gave a brief welcome. Herbert Ufer, retired, admonished government officials to interest themselves in inspectors' problems and inspectors to respect the fact that officials were busy men. Smith spoke briefly concerning the condition of the IAEI and answered a few code questions posed at that time.

Chairman E. R. Anderson, Telluride Power Co., Richfield, Utah, started the evening meeting with a brief report and a pledge to continue his active interest in the chapter programs. Committee reports were streamlined to bare necessities and extraneous discussion was tabled.

In discussing the Utah Chapter's complaint of the past year relative to visits from IAEI officers to the annual chapter meeting, Smith discussed the problem the national officers have in covering the whole United States. The purpose, he said, is to alternate between himself and the technical assistant, Everett Cogan, and efforts will be made to have either one attend future annual meetings. As a result of this, the resolution adopted in 1955 was rescinded and a new resolution passed, praising the 1956 efforts of Smith in visiting chapters.

Misleading advertising by manufacturers of 110-v portable clothes dryers, saying that they "can be plugged in anywhere" or "plug in on any 110-v circuit," drew considerable discussion and finally a resolution was passed to be sent manufacturers of such equipment condemning such advertising. Numerous reports from consumers with complaints of blown fuses, unsatisfactory operation of the dryers when used under conditions that such advertising implies will be satisfactory was stated in the resolution. The IAEI national office was asked to bring to the attention of the manufacturers this untrue advertising.

Following a short code question-and-answer session, in which Smith served as moderator, the annual election of officers was held. A. H. Bywater, chief engineer, Utah Fire Rating Bureau, succeeded E. R. Anderson as chairman; William T. Hawes, Provo city electrical inspector, was advanced to first vice-chairman; Norman Hall, Salt Lake City inspection department, was named second vice-chairman; and L. M. Christensen, Salt Lake City chief inspector, was re-elected secretary-treasurer. In his report, Christensen noted that the chapter had held six successful meetings since last year.

Growth Factors

SHOPPING CENTERS—The new Lloyd business-shopping center in Portland, shown in the artist's rendition, will be the world's largest, costing $25,000,000. There will be office buildings, medical center, 130 stores and shops with 3½ miles of show windows and multilevel parking facilities for 8,000 cars. Freeways will funnel in traffic from all sections of Portland. The two power companies serving Portland are building new hydro plants to serve growing loads. PP&L is building its Swift project (left insert) and PGE its Pelton plant (right)

Idaho Chapter

Problems of grounding in an already arid area where plastic water piping may be used and the same problems other inspectors have had in regard to the wiring of separate range tops and ovens were the chief items of code discussion that took most of the afternoon at the annual Idaho Chapter meeting held at the Elks Club, Boise, April 19. Charles W. Davis, superintendent of power, city of Burley, chapter chairman, presided. The inspectors also were given an opportunity to learn of the help they are receiving in providing greater safety through greater adequacy by the programs of the Snake River Valley Electrical Assn., which is implementing the Live Better . . . *Electrically* and the Housepower promotional programs.

In fact, after the usual welcome from Mayor R. E. Edlesen of Boise, with a response from M. M. Seville, manager, General Electric Supply Co., and Mark H. Lundy, secretary of the chapter, Joseph I. Wright, Afton-Lemp Electric Co., gave a comprehensive review of the formation, purpose and activities of the Snake River Valley Electrical Assn. He credited Carl Baldridge, state electrical inspector, with sowing the seed for such an organization in October 1954.

It was organized and now has 12 distributor members, 27 manufacturers' representatives, 30 electrical contractors, 25 dealers, 19 utility members, 8 electronic, 10 servicemen and 10 affiliates, such as inspectors. Among the activities of the association have been the support of state inspection and improvement of local ordinances. Wright said it was the intent to develop new chapters in Twin Falls, then Pocatello and the Idaho Falls territory, later in the year.

The electrical safety essay contest in cooperation with the inspectors had brought between 5,000 and 10,000 answers and had done an educational job in acquainting school youngsters and their parents with the fundamentals of electrical safety. He said that the Housepower program would also be carried on through the association.

The Idaho meeting was favored by the presence of Cliff Atkins, president of the Northwestern Section from Portland. He made a membership plea and discussed the action taken at the last annual meeting asking for the elimination of the rule for the limit of six disconnects. With tremendous power use increase in the Northwest states, he felt that the rule was unrealistic.

L. B. Johnson, General Electric Co., Salt Lake City, speaking on adequate wiring promotion, told of the need for common ground for definitions of adequate wiring and how the national standards were set up so to define it. He said that the SRVEA would be an ideal medium through which to apply for a license and certify homes for adequate wiring. He showed the difference between the National Adequate Wiring Bureau standards and those of the National Electrical Code minimum and that for every home that receives a certificate five will be greatly improved as a result of the effort.

In his talk to the Idaho Chapter, Smith mentioned the 1956 code and the difficulty in preparing it under a new format that would be easier to use by the electrician. There has not yet been time enough to absorb the project and to print it for this next code. It is going through the correlating committees and code panels at the present time.

Mentioned among the changes in the 1956 code were the recognition of some new products, including some aluminum conductor tables of carrying capacities, rules regarding concrete raceways and that receptacles would be required on 12-ft intervals instead of 20 ft. He particularly stressed the participation in National Electrical Week and urged all-out effort to make it a real national event next year.

Of association activities, he commented on the growth during the past year from 6,530 members to 9,584 as of March 30; the national recognition now given the IAEI; the improvement of meetings because of more time for code and inspector problems' discus-

New team will revive Rocky Mountain Chapter, IAEI—D. G. Mulligan, secretary; Bennett Short, chairman; Don Murtaugh, Howard Pease, vice-chairmen; H. Davin, membership

sions; how centralization of dues collection had saved the time and energies of chapter secretaries.

In discussing the problems of holding meetings in the scattered State of Idaho, he suggested the method used by Michigan University as a possibility for the universities in Idaho to give code education.

A code panel to answer questions, with Smith as moderator, included Park H. Forte, city inspector, Boise, Don Baird, city inspector, Caldwell, Clyde Hicks and L. B. Johnson. In discussing the higher wattage of appliance installations, Les Johnson made the prediction that with the rising price of copper inspectors could expect greater use of aluminum conductors in cable. Using aluminum, the conductors would be of large size and if separate conductors were used it would require too large sized conduits for residential practicality. He predicted that soon range outlets would come with larger terminal facilities for aluminum conductors.

Also discussed were the use of gas pipe for grounding, the plastic water pipe problem and the inspectors' disapproval of kitchen center units with a panel under the sink, which would prove hazardous should someone have to work on it. Atkins said that the State of Oregon had ruled such panels out.

At the annual election of officers, A. H. Gates of Mountain Home was elected chairman to succeed C. W. Davis. Vice-presidents for the four districts were: Floyd Warner, Kellogg, District 1; Bob Gudeman, Nampa, District 2; Glen Davis, state inspector, Twin Falls, District 3; Hy Hansen, city inspector, Idaho Falls, District 4. Mark H. Lundy, assistant secretary-manager, Idaho State Electrical Board, was re-elected as secretary-treasurer. Executive committee members include Charles Davis, past chairman, Burley; Don Baird, city inspector, Caldwell; and Park Forte, city inspector, Boise.

W. A. Hopper, Gem State Electric Co., was master of ceremonies for the evening banquet, providing a program of vocal music and an exceptionally interesting talk by Arthur Van Slyke, a farmer of Wilder, Idaho. His topic, "What's in a Basket of Fruit?" told the enterprise story of an independent, self-reliant farmer and what he does to grow and market superior fruit. The electric fence and the combine, he maintained, have done more to free the farmer from the 80-hour week than anything Congress has ever passed. He reminded that for every dollar a farmer gets in government subsidy "you taxpayers send $6 back to Washington and very little trickles back."

Other Meetings Canceled

Although arrangements had been made for meetings with Smith for the Eastern Washington Chapter, Puget Sound Chapter and Oregon Chapter of IAEI, he had to cut his trip short at Boise and return to a NFPA meeting in Boston. The annual meeting of the Montana Chapter was also scheduled for April 27-28 and was held at Billings. No report has been received as yet of this meeting.

Rocky Mountain Chapter, which has had very little attention during the past two or three years, did have a half-day meeting May 2 in Denver in an effort to revive the chapter and restore it to its once active status. Harry Arthur of the city of Denver inspection department arranged for the half-day session at the Auditorium Hotel.

Charles L. Smith was able to fly back to Denver for this session and spent the morning with the members representing various parts of Colorado.

Bennett Short, Southern Colorado Power Co., Pueblo, was re-elected chairman of this chapter and D. G. "Mike" Mulligan, Mountain States Inspection Bureau, was named secretary-treasurer to succeed Meryl Mentzer of Rocky Mountain Electrical League. Don Murtaugh, Mountain States Inspection Bureau, was named vice-chairman, as were Howard Pease, Mountain View Electrical Assn., REA, Limon, and Fred Snyder, electrical inspector of Grand Junction. Harry Davin, Bussmann representative, was made membership chairman.

Discussion on how to revive the chapter and its activities occupied most of the morning with a code discussion panel following. In this, the merits of having 100-amp minimum services incorporated in local ordinances were discussed from various viewpoints. Colorado Springs, said Dale Markham, has long had such a requirement and several other communities have recently enacted similar ordinances. The NECA in Denver has been working with the industry for revision of the local ordinance and similar action is contemplated in other Colorado communities. The meeting concluded with a noon luncheon and a promise to hold at least quarterly meetings of the chapter in the future.

Nevada Chapter had set its annual meeting dates in advance to obtain hotel facilities and so held its meeting on May 11-12 at Hotel Mapes, Reno. While a report in detail has not been received, on the program were to have been a talk on power from the sun, proposed state inspection legislation, proposed code changes and inspectors' problems. A breakfast for code discussion, a luncheon and a banquet on Saturday were on the schedule. Reports say that attendance was substantial and interest keen despite rain and snow.

Executive committee of the Southwestern Section approved the petition of the Hawaii Chapter for the formation of a branch at Maui.

Also appointed were the committeemen to handle the arrangements for the Southwestern Section annual meeting, Sept. 17-19, at the Claremont Hotel in Berkeley, Calif. President James Ambrosi of Oakland appointed Pat O'Leary, Berkeley chief inspector, as general chairman. He in turn named Richard Schwarz, Safety Switchboard Co., Oakland, as display and advertising committeeman; E. E. Carlton, State Division of Industrial Safety, as program chairman; Frank C. Jones, Phoenix, as correlator; Barney Alverson, San Bernardino, as education chairman; Charles T. Brooke and Mrs. Carl MacWilliams of Albany as entertainment chairmen; Carl MacWilliams for registration; John Thompson of Berkeley, hotel; W. A. Cyr, ELECTRICAL WEST, publicity; L. E. LaFehr, Alhambra, Southwest Section secretary-treasurer, finance.

Panelists R. Anshen, L. Halprin, C. Bunce, E. W. Commery (W. Doty not here) gave—

New Views of Home Light

at San Francisco IES regional conference

A new look, an inside or subjective look at residential lighting and a first look at the new fluorescent lighting of as yet unopened San Rafael-Richmond bridge were the exceptional items in the well-rounded program of the first of three Western regional conferences of the Illuminating Engineering Society in April.

(The distinguishing features of each conference will be noted on these three pages and be followed by digests of the principal speeches made at one or more of the three meetings.)

Appropriate to the 50th or Golden anniversary of IES the South Pacific Coast conference was held by the Golden Gate in San Francisco, April 11-13. It was opened by O. R. Doerr, vice-president, Pacific Gas and Electric Co., with a review of the progress of lighting during the 50 years. He called for a renaissance of home lighting, suggesting that IES devote one meeting a year to outstanding progress on home lighting, that the sections initiate forums on home lighting.

Outstanding was the residential lighting session, Thursday morning, arranged by Walter Doty, *Sunset* Magazine. Besides a thought provoking talk on "Living With Light" that he gave himself he had as speakers Robert Anshen, architect, Lawrence Halprin, landscape architect, and E. W. Commery, General Electric Lamp Division, Cleveland. Their views deserve more space than available now; hence will be featured in ELECTRICAL WEST's lighting issue in September. Carleton Bunce, San Diego Chapter chairman, presided over this session.

Regional Vice-president Dan M. Finch provided another of the conference's unusual features—a tour of tunnel lighting installations in the Bay area, a visit to the University of California and Highway Department field station and street lighting laboratory, and a preview of the San Rafael-Richmond bridge lighting.

General Chairman James E. Barnes and John Walsh, program chairman, arranged the program to have an outdoor lighting session, under Roy H. Kreyser, Southern California Section; residential, under Bunce; industrial, under William Ross, Mother Lode Chapter; and store lighting, under George Ninnis, San Jose Chapter.

Following his presidential address on the state of the IES, R. F. Hartenstein, Ohio Edison Co., presented first prize in the "My Most Interesting Lighting Job" contest to Bill Jones, Smoot-Holman Co., Los Angeles; second to Milton Very, Fluorescent Fixtures of California and Norman Schiewe, PG and E, San Rafael; third to Robert Huff, San Diego Gas & Electric Co. Harold Wright, Golden Gate Section, conference host, presided at this closing president's luncheon on Friday.

PROGRAM

April 11, 1956

OUTDOOR LIGHTING

IES Golden Anniversary, O. R. Doerr, Pacific Gas and Electric Co.

New Ideas in Architectural and Building Floodlighting, William Shalda, Shalda Mfg. Co., Burbank.

Lighting for Outdoor Parking Areas, A. L. Pryor, Southern California Edison Co.

A New Approach to Highway Tunnel Lighting, Harold Skootsky, John Brass, California State Highway Dept., San Francisco; Gilbert A. Trosper, PG and E, San Francisco.

STREET LIGHTING

Inspection tour U. C. field station, Richmond and Richmond-San Rafael bridge.

April 12, 1956

RESIDENTIAL LIGHTING

Living with Light, Walter Doty, *Sunset* Magazine, Menlo Park.

Residential Lighting Design, Robert Anshen, architect, San Francsco.

Lighting for Outdoor Living, Lawrence Halprin, landscape architect, San Francisco.

The Luminous Environment Home, E. W. Commery, General Electric Lamp Divison, Nela Park.

INDUSTRIAL LIGHTING

Light and Vision on the Production Line, C. L. Crouch, IES, New York.

Light Sources for Industry, R. G. Slauer, Sylvania Electric Products, Salem, Mass.

Lighting the Rocketdyne Aviation Plant, J. S. Hamel, consulting engineer, Burbank.

Keeping Foot-Candles Up, Roy Jones, Westinghouse Lamp Division, Los Angeles.

175 Foot-Candles Luminous Ceilings for Industry, Thomas Allinson, Beckman Instruments Co., Richmond.

April 13, 1956

STORE LIGHTING

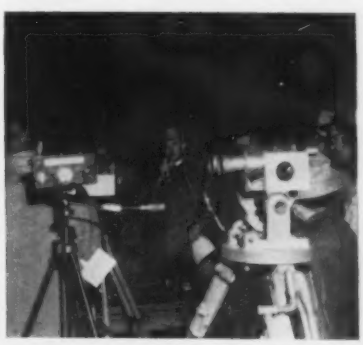
Light Creates Environment for Sales, C. M. Cutler, G-E Lamp Division, Nela Park.

Lighting the Shopping Center, Griswold Raetze, Welton Beck & Associates, San Francisco.

Luminous Store Front Displays, M. R. Mausshardt, Electrical Products Corp., Oakland.

Store Lighting Electrical Design, Clyde E. Bentley, consulting engineer, San Francisco.

General Chmn. Barnes; Pres. Hartenstein



Regional V-P Dan Finch, street laboratory

At Spokane's Pacific Northwest Regional IES were announced—

New Light Sources

Banquet for President and Mrs. Hartenstein and Regional Vice-president Blair Plowman

A new grooved fluorescent lamp tube that doubles the light output of former lamps made its debut at the Pacific Northwest regional IES conference in Spokane, April 19-21. That news and demonstration and details about several other improved light sources made this conference exceptional in that respect. Held in Regional Vice-president Blair E. Plowman's home city, the Inland Empire Chapter, which he started, was host to the region's largest attendance. John Ruffatto was general conference chairman, Dave Mozes, chairman of program and papers.

As he did at each of the three conferences, President R. F. Hartenstein, Ohio Edison Co., reviewed quickly the activities of IES and paid tribute to the founders, who met Jan. 10, 1906, at the Astor Hotel in New York to start the society. Then he faced to the future with a strong plea for training of more people in illumination.

"It ought not to be possible for anyone to graduate from any engineering or architectural school worthy of the name without a simple working knowlelge of applied illumination," he declared. The lighting education committee had reported that 535 organizations had predicted they would need 1,300 technically trained persons in the next five years. A faster tempo in preparation of IES recommended practices, considered "gospel" by industry, is also needed, he said. More funds are needed for research and for staff, he went on to point out and urged members to endorse the increase in dues proposed in this year's election.

"Each year there is more and more evidence," he concluded, "that the future of our society lies in fields related to the application rather than to the creation of light . . . The technology of creating light and perhaps of applying it is only half the job—the other half is using it. It must be a human evaluation in terms of psychology, physiology, art and many other human viewpoints . . .

"Lighting in our first 50 years has been primarily a mathematical science of quantity. For our second 50 years it will be the human science of quality, a yet unmeasured and presently unmeasurable goal."

In the "My Most Interesting Lighting Job" contest first place went to Dorothy McGregor for her entry, "Ease of Living Home." She is with B. C. Electric and was winner of the British Columbia Section. Ted Beadle, Washington Water Power Co., Inland Empire Chapter, was second with "Lighting the Downtown Customer Service Center." Jack Cottingham and Marv Prestwood of Portland General Electric Co. were third with the lighting of a new utility service center.

The chairmen of the five sections and chapters took turns presiding. These included J. H. Gilbreath, B. C. Section; Joseph Doyle, Inland Empire Chapter; Donald Edmundston, Oregon Section; G. Donald King, Puget Sound Section; and A. C. F. Evans.

PROGRAM

April 19, 1956

Light Sources, C. Willard Brown, General Electric Co., Nela Park.

Office Lighting, J. Roy Jones, Westinghouse Lamp Division, Los Angeles.

Panelescent Lighting and Other Sources, R. G. Slauer, Sylvania, Salem.

Lighting in the Spokane Schools, Howard A. Stingle, School District 81, Spokane.

April 20, 1956

Technical Aspects of Society and Research Program, C. L. Crouch, IES, New York.

"My Most Interesting Lighting Job" Contest.

European Developments, C. Willard Brown, G-E, Nela Park.

New Ideas in Architectural Floodlighting and Area Lighting, William Shalda, Shalda Mfg. Co.

Lighting of Disneyland, J. S. Hamel, Burbank.

April 21, 1956

The Effect of IES on Street Lighting, Dean Morrill, Line Material Co.

Parade of Progress, Walter Potter, chairman, Eric Ackland, Ken Hollingsworth, Walter Lind.

H. F. Hartenstein
IES President

Blair Plowman
Regional Vice-president

Joseph Doyle
Host Spokane Chapter

John Ruffatto
General Chairman

J. H. Gilbreath
B. C. Section

R. G. Slauer
Sylvania, Salem, Mass.

President Hartenstein, Willard Brown, Glenn Gaer, V-P Jerry Whitnell at banquet. "My Most Interesting Lighting Job" contestants

At Salt Lake City's Intermountain Region IES it was—

School Light Theory vs Practice

Challenges to the IES school lighting standards came from two directions at the Intermountain regional conference in Salt Lake City, April 26-27. One was from a school plant planner Fred Fowler, that the proposed revision will permit too high brightnesses. Another came from G. B. Buck II, G-E Lamp Division, Denver, that retaining the 30 f-c minimum was outdated .To reissue the standards with such levels would make them useless in view of present practice, he maintained in a talk covering over-all cost analysis of a lighting installation.

Regional Vice-president J. D. Whitnell, Arizona Public Service Co., Phoenix, brought a real contribution to the topic—a study of daylight measurements in sunniest Arizona public schools. Matt Cabot, Day-Brite, San Francisco, added a practical and simple means of glare factor calculation for any interior lighting system.

Residential lighting was treated both satirically—by W. A. Cyr, consulting editor, ELECTRICAL WEST, in "A Home Is Not a House"—and seriously by Leo A. Hansen, Westinghouse Lamp Division, Salt Lake City.

Appropriate finale to a conference in Salt Lake City was a pictorial description by Architect E. O. Andersen of L. B. Gawan's lighting design for the new Los Angeles Latter Day Saints temple (See ELECTRICAL WEST, Jan.).

Winner of the "My Most Interesting Lighting Job" contest was Charles Bell, Southern Colorado Power Co., Pueblo, for a crockery store installation. Second prize went to Glenn Gaer, Denver, for the reception room lighting at Coors brewery at Golden. Third was for an auto showroom in Phoenix by J. R. Williams (presented by F. Gasperak).

Whitnell presided for Bevan Jones of Arizona Section, Robert Uhl for W. B. Hills of New Mexico Chapter; Glenn Gaer, Rocky Mountain Section, W. D. Proudfoot, Southern Colorado Chapter and Siguard Blomquist, Utah Section, presided in turn. J. Homer Shaw, Utah Power & Light, and A. E. Fleming, G-E Supply, were co-chairmen of the conference. L. B. Johnson, G-E Co., was program chairman.

Hosts—Homer Shaw, Les Johnson, Sigurd Blomquist and Gene Fleming, co-chairmen

PROGRAM

April 26, 1956

IES Golden Anniversary, R. F. Hartenstein, IES president, Akron, Ohio.

"My Most Interesting Lighting Job" Contest, P. W. Smith, leader, W. E. Corp., Salt Lake City.

School and Commercial Lighting, Benjamin Benson, Benjamin Electric Co., Des Plaines.

Don't Make Light of Lighting, W. A. Cyr, ELECTRICAL WEST, San Francisco.

A Bushel of Light, C. L. Crouch, IES, New York.

Trends in Stage Lighting, Ariel Davis, Ariel Davis Mfg. Co., Salt Lake City.

New Developments in Lght Sources, Willard Brown, G-E, Nela Park.

Trends in Residential Lighting Practice, Leo A. Hansen, Westinghouse Lamp Division, Salt Lake City.

April 27, 1956

Lighting Problems in School Planning, Fred M. Fowler, Utah Director of School Plant Planning, Salt Lake City.

Daylight Measurements in Arizona Public Schools, J. R. Williams, Arizona Public Service Co., Phoenix.

School Lighting, Leon Miller, Board of Education, Salt Lake City.

Light Sources for Industry, R. G. Slauer, Sylvania, Salem.

Lighting Problems in Large Industrial Plants, J. Roy Jones, Westinghouse, Lamp Division, Los Angeles.

Lighting Problems in Small Industrial Plants, Allen Rudy, Utah Power & Light Co., Salt Lake City.

Glare Factors, Matt Cabot, Day-Brite Lighting Inc., San Clara, Calif.

Lighting Cost Analysis, G. B. Buck II, G-E Lamp Division, Denver.

Lighting at the Los Angeles LDS Temple, E. O. Anderson, architect, and L. B. Gawan, illuminating engineer, Salt Lake City.

Lighting and Other Light Touches in Europe, Willard Brown, G-E Lamp Division, Nela Park.

William Shalda—There is "nothing in the books" that is as good as to set up an actual demonstration with portable equipment to try out and arrive at a building floodlighting effect that is fully satisfactory. He showed how his company does so, even being equipped with portable generator plants and walkie-talkie radios to serve portable equipment and direct the focusing. From actual results they design and install the permanent equipment later. Extensive use is made of reflector lamps to control the beam pattern.

Roy Jones—In an industrial plant the lighting may cost $50 per man per year but, compared to a $10,000 investment in plant for that man, it is justified if good light makes him even 1% more efficient. He stressed the need for data and urged that surveys be made a year or so after each job. He showed charts of measurable costs available to measure the losses from lamp depreciation, dirty reflectors, lamps and room surfaces and burnt-out lamps. Even use of these data will prove the economics of maintenance.

J. S. Hamel—A crane rail system for maintenance of the lighting system in the extensive high ceilinged Rocketdyne plant of North American Aviation was described. It required integration of the lighting system to the building structure with its pipes and ducts—and within a budget. (Story on this job soon.) The Rocketdyne installation was told at the San Francisco conference. Some special features of the fixture design to baffle the direct view of the lamps in an open industrial type fixture were incorporated in this job. At the Spokane conference Hamel described the lighting he had designed for Disneyland. (See ELECTRICAL WEST, December 1955.)

Dean W. Morrill—The principles that have been developed by the IES street lighting committees over a long period of time in respect to incandescent sources are going to govern fixture design in the future, whether the source is mercury, fluorescent or something new. He demonstrated a new golden colored mercury 400-w lamp for street lighting that fulfills the cautionary requirement wanted by traffic engineers for dangerous locations yet is interchangeable with standard 400-w mercury lamps. The new silver white color corrected mercury lamps now make mercury sources more acceptable for residential area street lighting, he said. More of it is being installed.

Willard Brown—The new "power groove" fluorescent lamp gives double the output of lumens of any lamp of comparable length. Although promising a fluorescent source of high power it will require new fixture designs and ballasts for proper use. Sample lamps are being given fixture manufacturers to get fixtures on the market by next year. Commercial and street lighting applications are foreseen. Brown also showed other new lamps. He likewise spoke and pictured impressions of a European trip to a lighting forum. Beautiful color pictures of scenes and installations were taken by him.

Walter Potter—Assisted by Ken Hollingsworth, Eric Ackland and Walter Lind he staged the Parade of Progress in lamps and lighting equipment. Among items new were a new 3-filament lamp for small table lamps, longer life high wattage lamps to reduce maintenance cost, sealed beam lamps with rectangular beams, quartz heat lamps of high heat output, new tiny reflector lamps, socketless toy and twinkle lamps, a salt water energizing rescue lamp, use of phosphors as a reflector in mercury lamps, and many others. Brown showed these at the Salt Lake City conference subsequently.

Harold Skootsky, John Brass and Gilbert Trosper—A new approach to tunnel lighting is being taken by highway engineers. The use of continuous rows of fluorescent lamps is found to be much better than separate units. The importance of higher wall and ceiling brightness to silhouette cars against and additional light at entrances and exits, to help drivers' eye adaptation from outside levels to those inside, were stressed. Higher speeds and the occasional stalled vehicle create greater hazards. However the cost of getting lighting levels at entrances sufficiently high by the use of electric lighting is a serious factor. Romaine Myers, who designed the daylight louvers at each end of the Oakland Broadway tunnel, maintained that these had succeeded in adapting eyes without high operating cost. A tour of Bay area tunnel installations was made that evening. On the same program **A. L. Pryor** advocated the use of quality street lighting standards and luminaires for the illumination of shopping center parking areas. He showed how flimsy standards and insufficient number of units were poor economy because the public soon avoided such unattractive areas. The parking space is a selling point.

Ariel Davis—Footlights, once the symbol of the theater, are passe in modern stage lighting. Light now comes to the stage mostly from above and from behind the audience. Most of all stage lighting must be flexible and versatile. This means that most of the equipment is portable and except for the receptacles into which to plug cables the wiring is never permanent. Davis demonstrated plug or patch boards used to select circuits wanted under control at the switchboard by means of cords and plugs and a new quick connect panel that he has developed. Also shown were a channel of aluminum for plugging in border spots, elipsoidal reflector spots and his extremely wide range dimmer of new design and rugged make.

C. M. Cutler—Foot-candles mean less in store lighting design than the creation of an environment that attracts attention and invites buying. In a well illustrated talk he showed the considerations to be made and the steps taken to design lighting for various areas of the store.

Griswold Raetze—From the architect's view he described what had been designed for the large shopping centers in the Bay area to provide economy, good distribution, balance of light sources for color, flexibility for change, low maintenance and preparation for future growth. Interesting was the increase in f-c levels at night to aid tired and crowded shoppers.

M. R. Mausshardt—He told the importance of the well-designed and illuminated store front and signs to make an attractive "package."

Clyde Bentley—Told how the consulting engineer must coordinate all viewpoints and factors to provide the client with what he needs and to make him satisfied.

R. G. Slauer—Although he named some new light sources a reappraisal of present sources, many of them improved, should be made to find how they may be applied. Incandescent sources with new axial filament give a 15% increase in output. Molten metal sources promise many applications. High-voltage lamps offer reduced copper wiring costs. A new silver white mercury lamp gives 10 to 20% more light with better color correction. A radio-frequency operated lamp and a strob beacon lamp promise much.

C. L. Crouch—Some conception of the ramifications and complexities of the research problems being faced by the society's research institute and by the committees working on recommended practices was given by the IES technical director (center, below). He told that the QQ committee is trying to simplify four glare evaluation systems into one so that it may become an international standard. One of the contentious points in the school standards has developed from this. Much more research is needed.

Fred M. Fowler—(at right). All tied together in the school lighting problem are the visual environment wanted, design solutions and economic factors. It is the school people who must define what environment is wanted. This is stated in the goals published by the National Council of Schoolhouse Construction. He showed tests in local schools which failed to meet these goals as to brightnesses.

J. R. Williams—In his absence Jerry Whitnell reported results of a study made in sunny Arizona of daylight measurements in a number of schools having radical modern design for daylight control. Readings in nine locations in each room were taken. Records show wide variety of intensities, glare on desks from windows. The conclusion : Daylighting has not yet been well enough controlled to give good seeing.

Leon Miller—After some research of its own the Salt Lake City school department made some practical policies. Compromises had to be made with the "biggest unsolved problem," sky brightness. Artificial lighting is also used for warmth and to maintain minimum levels throughout classrooms.

Benjamin Benson—Opening a box and taking out a string of four 100-w lamps to represent the lighting he had in his school days he said school people know little about light but a lot about money so lighting is bought on price instead of quality. The insecure attitude of most lighting salesmen leads them to compromise on IES standards whereas true economy comes from good engineering. The brightest objects in the classroom should be the students . . . Changing hats, he said a lot could be done to make a small store look different with the tools at hand and the owner would get even by luring your wife in with light to buy a new fur coat. To sell offices, work on the accounting department first. It is dearer to the heart of most businessmen.

President Oliver Burnett brought . . .

Harmony to NECA

Districts 6 and 8 conference at Salt Lake

• and an automated estimating system was unveiled

No electrical contractors' gathering ever lacks drama. The nature of the business and the individualists in it guarantee this. At the third combined Districts 6 and 8 conference of National Electrical Contractors Assn., at Hotel Utah, Salt Lake City, May 3-5, the unprogrammed drama swirled around redistricting to make California and Nevada a district of its own. What this would do to the Northwest states of Washington and Oregon was the question. Would they be thrown with District 8, so far away in the Rocky Mountain area, or could the area support a district of its own?

After heated discussion in the California and District 6 conferences, wherein chapters changed sides dizzily, President Oliver Burnett, Chicago, brought harmony when he urged that measures, already started, be carried through to form a new district for California and Nevada and to make the Pacific Northwest states into another district. This settled the debate until the national convention in San Francisco in September. When the 250 contractors and their wives took buses to visit the Kennecott copper mines and smelter, peace reigned again.

Another change announced was that Matt Sherwood, who has been field representative and Western director for NECA, headquartered in San Francisco, would henceworth become technical editor of *Qualified Contractor* and its advertising representative in the West. Dexter D. Jewett replaces Sherwood as District 6 representative, with San Diego as his home.

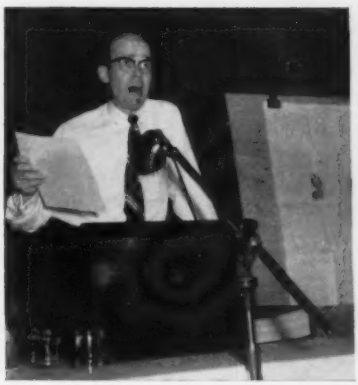
That NECA has grown in stature in the electrical industry was in evidence throughout a strong program. Its participation in the industry-wide promotional drives, such as Live Better . . . *Electrically,* Housepower and its own advertising program ; its thorough and well organized program of self-education by its research and education director, E. R. "Al" Cornish ; its forward look toward the manpower needs of the future through apprenticeship and retraining programs in cooperation with IBEW assumed their predominant place in the program instead of the labor tie-ups and controversies of the past. There was even talk of bringing in nonunion contractors again—and of converting them, of course.

Despite the hassle over districting, both breakfast conferences of the separate Districts 6 and 8 and the chapter conferences of the Northwest and of California and Nevada voted to hold the next regional conference in Portland next spring, whether they are two or three districts by then.

The conference was presided over alternately by W. P. Robbins, vice-president, District 8, Salt Lake City, and W. R. Grasle, vice-president, District 6, Portland. Utah-Idaho Chapter was host to the conference and its manager, Floyd Shipp, Vice-president Robbins and Chapter President C. I. Berrell were justly credited with the smooth-running arrangements.

In a word, the program was split into three phases of a contractor's business—market, management and men.

District 8 Vice-president Phil Robbins opened the joint conference at the luncheon May 3 atop Hotel Utah, Salt Lake City



District 6 Vice-president Grasle . . . Ralph Johnson explains his Estimatic system . . . Dexter Jewett and Joe Bollinger, field men

Big Market, Many Services

Maintaining that America is underbuilt for its potential growth in the next decade, Oliver F. Burnett, NECA president, likened the association to a manufacturer, the chapters as local distributors with exclusive franchises, and hold how members must merchandise these services to cover the market or it would have competitors take the business away from them.

Next decade's $600 billion construction business, $60 billion a year, will require more people, more contractors and more electricians. Therefore, he urged the IBEW to open its doors to take more men in and to train more apprentices and the chapters to take in more contractors and educate them to the virtues of making a profit.

"There is not a contractor who is worth his salt to himself or to his country unless he makes a profit," said Burnett. He urged a re-examination of the association's organizational structure, dues, abilities in selling and in installation, and the association's facilities and products. These he reoriented into public relations, marketing, labor relations, technical and field services to be performed by NECA.

Participation by and opportunities for electrical contractors possible in the electrical modernization programs of the entire industry, the Housepower and Live Better . . . *Electrically* programs, were passed in review by E. R. Cornish, research director, NECA. The pressures building up from manufacturers, utilities, population growth, industrial expansion and appliance promotion are going to be so great contractors must do something about them or someone else will do the work thus generated.

A panel introduced by A. R. Woolley, Idaho Falls, with Paul M. Geary, executive vice-president, NECA, as moderator and with Cornish, L. F. Anderson, IBEW vice-president, District 8, and A. E. Fleming, district manager of supplies and apparatus, G-E Supply Co., further explored the subject. Woolley declared that if NECA was to claim itself a national association it must meet the challenge. Anderson conceded the difficulties of manpower and said IBEW recently had held some meetings in Washington on the subject. IBEW President Freeman, he said, had declared that every member of IBEW had a duty to get into the home modernization work, whether or not he preferred to work on million-dollar jobs instead.

Fleming urged closer affiliation with and work under local leagues and promotional organizations to help develop this business. Geary suggested that a group of contractors could form a new company to specialize in modernization business, standardize procedures to reduce prime costs and that NECA would offer management plans to assist. Not more contractors, said Geary, are necessary, but that the present ones expand their capacity. He declared it to be a local problem, to be met at that level.

R. B. Lane of Seattle said there were enough businessmen in NECA that could equip themselves to take over this business and expand it, but in recent times the modernization business has been shrinking as the public has not been willing to pay the prices required for it. Cornish declared that Section H of the estimating manual would be revised to combine analysis and estimating forms for simplification.

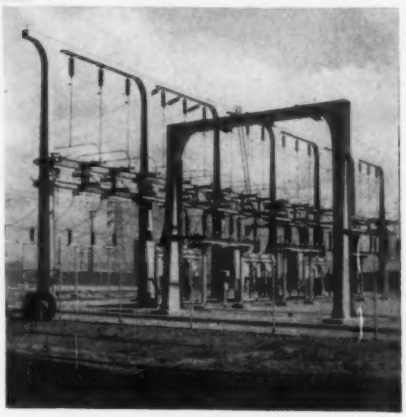
Introducing a new management course, Cornish addressed the Friday luncheon and reviewed the problems of present-day contractor management. Three major problems, (1) to get more business; (2) to perform the work; and (3) to administer that

Apprenticeship panel: Bill Damon, Adams, Harter, Anderson, Jones

Modernization panel: Fleming, Anderson, Cornish and Paul Geary

Growth Factors

TOURISTS—Fantastic is the term used by visitors to Disneyland in southern California, the greatest tourist attraction ever conceived by man. Here has been created a fairyland, a glimpse of early America and a look into the future—all with startling reality. Disneyland, plus the natural scenic grandeur of the West, attracts tourists in great numbers. Tourists need motels, restaurants and other facilities, which keep the Western contractor and distributor building for the ever-increasing crop of sightseers. Insert: Power companies must build facilities like that shown at the new 600,000-kw plant of So. Calif. Edison



business, requires intelligent planning, he maintained. In order to help managers to analyze their business, checking forms have been developed that will help clarify and organize the contractor's thinking. Also discussed was the management techniques for modernization work.

Estimatics

By far the most thought-provoking talk was by Ralph Johnson, Sturgeon Electric Co., Denver, on an estimating system he calls "Estimatics." Developed at considerable cost by his company, it has been in use for more than a year and found to speed estimating from 50 to 80%, increased accuracy, provide accurate bills of materials, furnish installation standards that are followed in all operations and provide release of materials to control the flow of the job. Although developed with an IBM system, Johnson said it can now be applied without the machines by other contractors and he plans to market it as a service.

Since an estimate for any sized job can be subdivided into classes of materials and into sections of the job and more-or-less standardized operations, the system consists of assembly units represented by a graphic symbol on the plans with all items commonly used together pre-estimated. A system of symbols using 10 digits, both letters and numbers, describes the features of the assembly which provides both the material and labor costs. The system has been found to involve some 25,000 different assemblies using as many as 18 materials or 10 to 15 products each. Estimating, he says, has become more an accounting job than an engineering one and by codifying the assemblies the estimate is simplified to a count of the assemblies and a totalizing of their already estimated labor and material costs.

A by-product is that illustrated installation standards are developed, which can be followed closely in the field. Likewise, the purchasing agent can buy and stock to standardized materials. Another feature developed has been a series of graphs for rather accurate estimates of the number of feet of conduit and wire per outlet on a square-foot basis. Johnson has always maintained that the overhead should be placed as a burden on the labor charge for better control.

Mel Parker, training director, Vancouver Works, Alcoa, who has conducted supervisory training courses for the Oregon-Columbia Chapter, NECA, went through the fundamentals of such a course, applying it to the contractor's business. The importance of foremen and supervisory personnel training was graphically illustrated in his sample case in which he took one contractor from the group and charted the responsibilities to delegate in his own small organization.

Larry Rodgers, Oregon-Columbia Chapter manager, told that the first series of such classes had trained 26 contractors and a second series for superintendents and foremen had trained 90, and would be repeated this fall. State vocational educational help is possible, he said. Power companies, he had found very cooperative in such a training program also.

More Apprentices

Saturday morning's session was devoted to apprenticeship. Lee Anderson, IBEW vice-president, told of the union's participation in such programs as part of his summary of joint problems with contractors on pension payments, council cases and the home modernization and wiring program. Besides organization work to unionize the residential wiring field, Anderson hinted that IBEW may even find it necessary to install new charters for unions of men doing predominately residential work.

The apprenticeship and training panel was led by Bill Damon, director, national joint apprenticeship and training committee of Washington, and had on it Eugene Jones, apprentice coordinator, Los Angeles Chapter; George Harter, Santa Clara-San Benito Chapter manager; Stanley S. Adams, Portland; and IBEW V-P Anderson. Damon spoke of measures being developed to determine how many apprentices the industry can absorb.

Concern was expressed over the extending of the apprenticeship tenure

to five years in order to include electronic training. Jones pointed to the public vocational training schools who are giving short courses in electronics and that these men would soon be in competition with the IBEW and contractor on electronic installation work unless the apprenticeship program can encompass electronic training and furnish the required manpower. Laws and indenture agreements have to be changed to extend the program to five years, it was pointed out.

Harter told that in his area the electronic basic information is simplified and taken into the fourth year of the course. Retraining of journeymen to make them fit partners for the apprentices so trained, he said, was the real problem. Eligibility of such men for union membership was discussed and Anderson said that if they were going to compete with IBEW men the brotherhood would find a way of bringing them in and requiring further training to make them journeymen.

Hosts—Utah-Idaho Chapter's Berrell, Borg, Shipp, Woolley and Phil Robbins, Dist. 8 v-p

District Conferences

Breakfast sessions that ran into the full morning allowed members of the separate districts and of the conferences of chapters to hold individual meetings on Friday morning.

District 8 did not take any stand on redistricting of District 6 but voted for more field representation of its own. It accepted Portland's invitation for the next combined district meeting but urged that a conference workshop meeting be held for District 8 alone in the fall. As long as they abide by the ethics of the NECA, electrical contractors wholly owned by general contractors would be acceptable, it was voted. A resolution that the national expand its membership frontiers as far as possible was passed. Discussed was a condensed, single- or two-meeting estimating class tour in the district to reach small contractors not now members and inform them better on costs.

District 6 discussed the Housepower, Live Better . . . *Electrically* and other programs in relation to journeymen training. The luminous area lighting agreement between carpenters and IBEW was discussed and results of the Certified Lighting program told. District research and education committees and labor policy were reported on by Earl Peak and L. M. Stewart, respectively.

Eligibility for NECA membership of wholly owned subsidiaries of general contractors was also voted after President Burnett spoke to the group. He also urged settlement of the districting matter right there and not at the board of governors' meeting. He advocated exchange of minutes between vice-presidents and districts. Portland was selected as the next meeting place. San Diego protested over the meager compensation for National Benefit Board work by chapters. Geary answered that the benefit board had adopted the plan for trial for one year and that it could be changed.

The redistricting matter drew considerable heat with changes of position between chapters from previous positions, and went into a local governors' meeting. It was later brought on the floor at a special extension of the meeting, and upon urgent recommendation by President Burnett was to be reconsidered by the executive committee and settled before the national convention this fall.

Northwest conference of chapters heard reports of chapter activities and wage negotiations. Also discussed was the joint apprenticeship program in relation to the right of an employer to lay off an apprentice for nonattendance, in view of a NLRB opinion. A letter, likewise, was authorized to chapters and members to tell the duties and responsibilities of chapters to temporary members and vice versa.

California-Nevada conference had a round table on wage negotiations and demands, and discussion of legislative council matters. The research committee was asked to provide labor unit data relative to luminous ceiling installations. Action was also discussed to get state and federal governments to allow proper markup for overhead and profit not now possible under the 15% a general contractor is allowed to cover his subcontractors' bids.

The line constructors' breakfast, Saturday, heard that the business development program of NECA has been aimed this year toward the obtaining of power company line construction and distribution work. Larry Rodgers reported on the success of a lineman apprentice training program and the cooperation given it by the power companies, particularly in giving experience with hot line work.

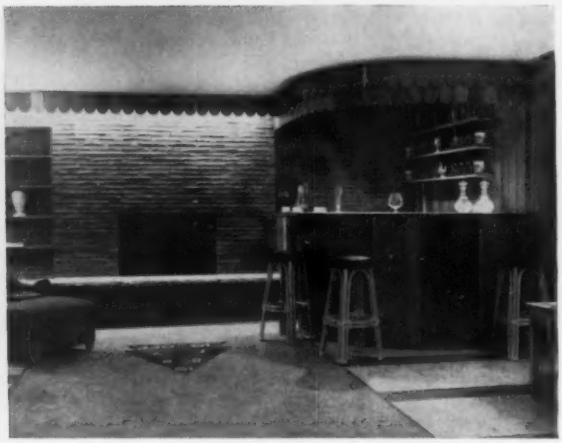
Complaint was heard that the inside locals wage rates are making it difficult for line contractors to obtain utility work because utility crew rates are much lower. A maintenance work differential for utility work is desirable, it was pointed out, and it is provided in contracts in some areas. Likewise, the working rules for utility linemen are not restricted as those for contractors.

Difficulties in REA work were discussed because so much of it is nonunion. With REA going into telephone construction, the jurisdictional difficulty between IBEW and communication workers union, CIO, was discussed and suggestions for conferences on the subject were made.

Resolution was unanimously passed to thank the Utah-Idaho Chapter for hosting such a fine program of entertainment and arrangements. Other resolutions were adopted. One covered the jurisdictional settlement of the luminous ceiling matter and recommended that similar procedure be had on other jurisdictional problems. One covered home modernization by urging that NECA members prepare themselves to do this type of work and that through labor-management committees steps be taken to assure adequate labor supply. Another urged membership drives to increase membership, irrespective of size, and to include all who are doing electrical construction work.

After much parlimentary maneuvering over the districting resolution, it was finally resolved to ask that a new District 9 be formed in time for submission to the executive committee for action at its June meeting. Burnett also recommended that joint conferences of the three districts be held in the future. Attendance was higher than at any previous district joint conference.

Lighted valances accent drapery colors; give general illumination



Textures are highlighted here. Bar has lights under glass counter

Light helps utility in

Selling Housepower

A house does not have to be expensive to have effective lighting.

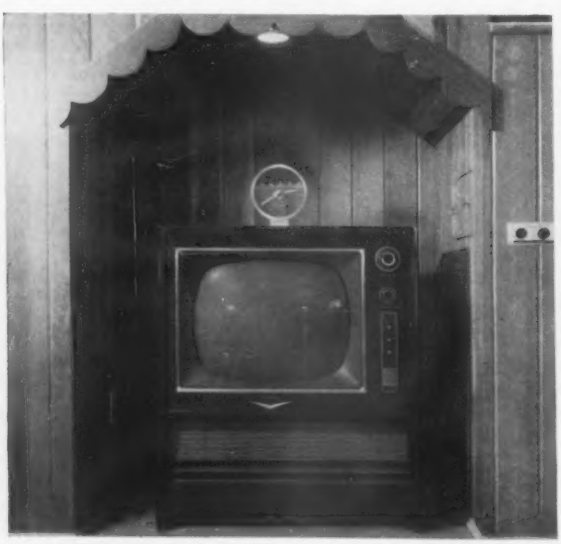
The one where these pictures were taken was high priced, but the individual lighting ideas might be applied anywhere. This one is in Lakewood, Colo., and was wired by Run Nel Electric Co., with fixtures by Rite Lite Supply Co., both of Denver.

Public Service Co. of Colorado's dealers and builders department encourages housing investors to include certified lighting and plenty of housepower in their plans. Allen M. Toppin sold the idea in this case.

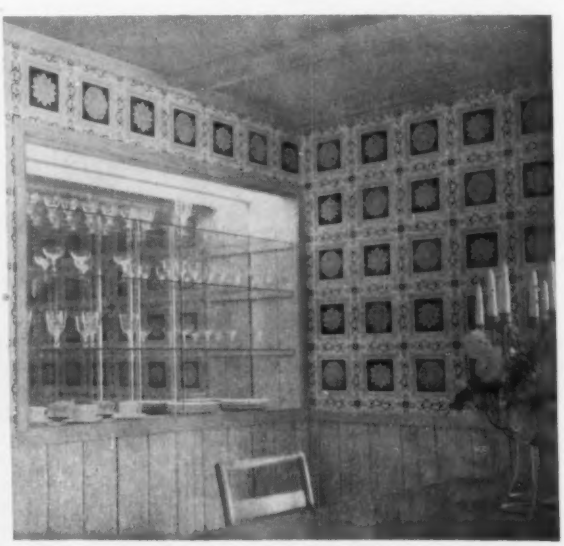
After the house is completed, a well publicized open house is held and the lighting effects are seen and appreciated by hundreds of people. Eventually some of the ideas reappear in other new houses, or even in older homes that are being remodeled.

Another benefit, after visitors are impressed by lighting arrangements, is that adequate wiring is given an entry that can be used well by the salesman. Wiring can't be seen, but good lighting can, and the wiring is necessary for the well-lighted home. The best way to sell Better Living is to show it.

Light makes space usable under cabinet



Semihidden light gives balanced contrast for television viewing



Crystal becomes decoration in lighted cabinet with glass shelves

ELECTRICAL WEST

Contractors' News Letter

QUICK NEWS ON TRENDS, LAWS, CODES, MATERIALS, EQUIPMENT, COSTS, WAGES, ETC.

Reach same levels

While no area agreement among the locals of IBEW and the NECA in the San Francisco Bay area resulted from the months of conferences, by Jan. 1 all will have the same wage scale, health and welfare, and vacation. The package will amount to $3.61 in January, 1c above the Los Angeles scale set last November. In Los Angeles, the electrician carries his own fringes. For he gets the total as a wage and both union and contractors are saved considerable bookkeeping.

Ten pins

San Francisco, as usual, agreed first. The basic $3.37½ scale went into effect June 1 and the increase in health and welfare from 7½c to 10c per hour begins Jan. 1. San Mateo County follows suit immediately and then Santa Clara-San Benito Counties reopened its two-year agreement to match the San Francisco scale beginning Aug. 1. In the East Bay, both Alameda County and Contra Costa County went back to the Council on Industrial Relations. Both unions had demanded immediate matching of the San Francisco scale but the council awarded it in two steps. Effective July 1, the journeyman rate goes to $3.30 per hour and Nov. 1 to $3.37½. Both will match the health and welfare 10c in January.

Jump the starter

While new building volume continues high, creating a seasonal shortage of electricians, what these new scales will do to the home modernization market, already having difficulty getting off the ground, remains to be seen. Similar wage scale increases are pretty general throughout the West, as June and July usually mark the new wage agreements after April and May negotiations. Psychologically timed to hit the contractors at the seasonal peak when they are most desperate for manpower, these negotiations seldom if ever take into account the homeowning public.

Find it's not easy

While Denver has a home modernization bureau and is doing lots of advertising, leg work, sales promotion and door-to-door selling, the going is really tough. Problem is to develop enough work to make worth-while to the 47 participating contractors their $15 per month selling contribution.

What they think

NECA's motivation survey to learn homeowners' attitudes toward modernization of wiring indicated that it was economically impossible for an electrical contractor to carry by himself the job of selling. Although cost was not found to be considered a major obstacle to rewiring, it has its place. Suspicion of utility and contractor motives, fear of higher cost through electrical contractors than through electricians were among the findings. Offers of free wiring checkups were also viewed with suspicion. Selling price for a $3.60 per hour wage cost to the contractor should be $6 per hour or 10c per minute. This is needed to cover the contractor's labor overhead of bookkeeping, taxes, insurance, supervision, tools. To sell this to the average homeowner wanting the new circuit or a few outlets, ofttimes involving a change in the service entrance, is a real job.

Want all of it

L. F. Anderson, District 8 IBEW vice-president, told the NECA conference at Salt Lake City the union wanted to have its members do all this home modernization work. He admitted their preference for new construction but said President Freeman had declared members must do home repair work if asked. He intimated that new locals might be chartered for home modernization work, recruiting now nonunion electrical workers who are doing the majority of it.

Barrage begins

Housepower made its first public debut in May magazines and TV. Live Better—Electrically, told pretty thoroughly to all segments of the electrical industry by now, only hit the public in April. Operation Home Improvement has been published since March. All will be needed and their combined voices, competing with the shouts from the auto, furnishings and vacation industries for those same dollars, must reach and persuade 2,000,000 homeowners this year to do something about it. The utilities of the West are all joining in the advertising promotion.

Pacific Power & Light with utilities in Oregon, Washington, Montana and Wyoming has announced a wiring finance plan, in which the company will carry the paper for wiring modernization over a three-year period. — **Money help**

A Working Guide for the Shelter Industry is the name of a new 66-page booklet to aid in the Live Better-Electrically promotion. It places emphasis on matching of the wiring to the load, a new concept of home wiring. Copies are available through utilities participating in the program. — **Book help**

In Colorado Springs the Southern Colorado Chapter of NECA took advantage of the Home Show in the Civic Auditorium May 15-18 to put on an exhibit on Housepower and adequate wiring. At the start of the Operation Home Improvement in that area, a special section of the Gazette Telegraph was issued. It contained 16 pages of ads and stories regarding all phases of house modernization. The NECA sponsored a two-page Live Better-Electrically spread in the center, supported by a large ad of its own and the contractor and dealer advertising. This won commendation from J. F. Biggi, manager, National Adequate Wiring Bureau, and the Gazette Telegraph reprinted his letter as a full page acknowledgment. Sales-minded Si Halle, NECA manager, did much to initiate it. — **Start promoting**

Material prices, which have been going up consistently in all lines the past three months, seem to have settled as June began. The backdown in the price of copper may hold them until steel goes up after wage negotiations finish. All predictions say there will be a steel price increase. — **Prices settle**

Luminous panels for lighting may be activated either by electricity or by radioactive materials in the future, T. D. Wakefield told the annual stockholders meeting of the Wakefield Co. recently. He predicted that the industry will develop broad area lighting products less than an inch thick with structural strength to hold movable partitions for the area below and with provisions for air diffusion, noise absorption and fire protection. Such applications will first come in commercial installations but finally reach the home building field. Another interesting comment was that, with construction costs rising, architects will continue to lower the height of rooms to squeeze more floors into multistory space. Hence lighting futures belong to companies with research facilities, initiative and capital to produce products that will help reduce the thickness of the floor-to-ceiling sandwich. — **Glimpse of future**

FHA reports continued upward trend in volume of applications for FHA mortgage insurance, despite the tougher credit terms. They are running below the highs of 1955, however. — **Trend still up**

Another jurisdictional agreement has been reached between IBEW and the Bridge, Structural and Ornamental Iron Workers. It became effective May 5, last year, although announcement is just now being made. It defines the erection of steel switchracks and substations as IBEW work, as well as steel tower erection. Unloading, moving, handling and setting of electrical machinery when rigging or power equipment is used, except small motors, is the work of the bridge men. Radio and television towers are likewise claimed. — **Who does steel work**

NEMA has nothing to do with home laundry equipment, L. D. Price, manager of the engineering and safety regulations department, hastens to correct us. The point was made clear regarding misleading advertising about which the electrical inspectors, particularly the Utah Chapter, have complained. The American Home Laundry Manufacturers Assn., however, should take note. Inspectors charge that ads saying that 110-v dryers can be plugged to any outlet leads to electrical hazards, customer dissatisfaction and is generally dishonest. — **Washes hands**

A do-it-yourself kitchen kit, offering the homeowner savings up to 50% by eliminating installation costs, has been developed by Crosley-Bendix and probably is on display at dealers right now. "Naturally, plumbing and electrical installation may cause some concern to homeowners not talented along these lines," a news story reports with the understatement of the year. — **More misleading**

Wiring in trailer parks was an important consideration during the two meetings May 17 at San Jose and May 23 at Los Angeles, conducted by Ernest B. Webb, director of the State Department of Industrial Relations, for the division of housing. Hearings were held for installation and maintenance of electrical wiring, fixtures and equipment in trailer parks, and other amendments to existing regulations governing structures. — **Permanent temporaries**

Last ditch fight

So near and yet so far describes the program of Senate Bill 1644, which has been blocked by every conceivable maneuver and delay that AGC and some government agencies have been able to concoct. At press time, it was still in the House judiciary committee and NECA and the Council of Mechanical Specialty Contracting Industries were doing everything to urge it to the floor of the House. Adjournment of Congress is not far away and election campaigning by congressmen apt to take all of their attention.

Needed soon

A long needed Industrial Electrification Council is being talked of as a major promotion for industrial wiring in 1957. Preliminary meetings between utility and manufacturing companies have been held, to develop a quarter-million-dollar advertising program aimed at industrial management.

Train the bosses

A job management course, developed by NECA, will be started by the Santa Clara-San Benito Chapter June 11 in San Jose, according to George Harter, manager. The NECA film and transcript and study course will be used as the basis for the course. This chapter has one of the most successful bid depository systems operating in its area, apprenticeship training, business promotion and numerous projects. H. H. Robison, Northern California Electrical Bureau, recently addressed the chapter on the certified lighting program.

Not too fast!

Too rapid expansion of construction activity this year, even to meet genuinely urgent demands, could cause inflationary pressures on building costs, Dr. George Cline Smith, economist and vice-president of F. W. Dodge Corp., warned in San Francisco May 17. "The inevitable result of trying to go ahead too fast will be shortage of manpower and materials, tight money and inflation of building costs, with the possibility of some mild fits-and-starts in the economy later on," he warned.

New field to plow

R. Crawford Logan, who has been administrator-salesman for the Wire Modernization program in Kansas City with the Electrical League there, has now come to Phoenix, Ariz., to inaugurate a similar program through the cooperation of the Electrical Joint Industry Board, the Salt River Power District and the Arizona Public Service Co. A program to do direct selling for contractors, similar to that in Kansas City, is contemplated. Prior experience of Logan was as sales manager of Evans Electrical Construction Co. in Kansas City and Omaha.

Men and moves

Among people: Garlan Morse, who has been a popular director of Pacific Coast Sales for Sylvania Electric Products with headquarters in San Francisco, has been promoted to general sales manager of Sylvania's Lighting Division and will move to Salem, Mass. . . . A. E. "Gene" Fleming is now the district manager of supplies and apparatus in General Electric Supply Co.'s realignment of its staff for the Rocky Mountain area. He headquarters at the Salt Lake City G-E Supply house but his territory includes Colorado, New Mexico and Montana . . . In a sort of musical chairs, E. E. Leavy, who has been manager at the Salt Lake City house of Graybar, has been appointed assistant district manager at St. Louis. Doral B. Eardley, a Salt Lake City native, who has been manager of the Fresno house, moves in as manager for Salt Lake City and C. H. Wissing replaces him at Fresno. G. M. Baker has been made manager of lighting sales at San Francisco, taking Wissing's place . . . Otto Drager, who has been in Seattle, will move to Spokane and become representative for the Wiring Materials Division of General Electric Co. for Spokane, Butte and Billings territory, formerly covered by Les Johnson of Salt Lake City . . . Matt Sherwood, who has been Western director and field representative for NECA in the Western states, becomes technical editor and advertising representative for Qualified Contractor magazine and Dexter V. Jewett, formerly field representative in District 7, becomes District 6 representative with his home in San Diego. He was formerly with IBEW in Philadelphia.

Air tragedies

Airplane crashes claimed the lives of two electrical contractors recently. D. B. Adams of Adams Electric Co., Spokane, a member of Inland Empire Chapter, NECA, was killed in an air crash near Pendleton, Ore., April 1. . . . Eldon Jacobson of Idaho Falls, with his wife, on a trip to Mexico City, crashed near Pocatello.

Branch out

General Electric Supply will open a new branch in Ogden at 2544 Ogden Ave., about June 10 to carry supplies only, according to Gene Fleming. Another was opened in Grand Junction May 11 at 457 Colorado Ave. E. L. Balfe is the salesman in charge.

Market growing

Sylvania Electric Products opened a new warehouse and offices May 14 at 4700 E. 48th Ave., Denver, to service the Salt Lake, Denver, Utah, Colorado, Wyoming, northern New Mexico area. The warehouse contains 35,000 sq ft and is in charge of Carl Long, formerly on the West Coast, who is assistant district sales manager for lighting, reporting to the Kansas City district. Also making office there are William Cummings of photo lamps and E. M. Wesick, the electronic division.

Temporary move

While building a new building on its property at 24th and Broadway in Los Angeles, the Los Angeles and Southern California Chapter of NECA has moved to 2700 S. Hill St., Los Angeles 7, retaining its same telephone.

Double duty

Combining an all-metal baseboard with its Plugmold, the Wiremold Co. has introduced a much needed new idea in house wiring. Not only does the metal baseboard contain the prewired receptacles but has space for up to seven or eight No. 10 conductors, which can be used as feeder circuits throughout the house. Originally designed for use in prefabricated homes, it can replace baseboards and carry the wiring in any type home or office. It is UL listed, fast to install.

Dents do it

Power Groove is the name General Electric gives to a new 8-ft, 2⅛-in. diameter, 200-w fluorescent lamp, which it claims doubles the light output per foot of length because of the reflective surface and the design of the grooves in the tubing. With the increased output of light, savings of 20% in initial cost over the high output lamps of the previous design and 10% in over-all cost are claimed. They are not interchangeable and will have to have new ballasts, lampholders and fixtures designed for them. Particularly useful in high-mounting heights, in floodlighting, streetlighting, signs, etc., the lamp should be available by early 1957.

More that's new

Other manufacturer news—Advance Transformer Co. announces a fluorescent lamp ballast servicing plan, with a nation-wide network of stocking distributors. These will replace, without charge, any Advance ballast that becomes inoperative within a two-year warranty period and offer immediate replacement of any other make of ballast . . . Ramset has something for the places where prejudice prevents the use of its powder-operated guns. It has developed a new fastening tool that will drive through ¼-in. steel manually with a hammer blow . . . Arrow-Hart & Hegeman now has a flush weatherproof plate assembly for its grounding and other receptacles and a new combination 125- and 250-v duplex receptacle for air conditioning.

Pioneer

Ben C. Hill, retired, once chief electrical inspector at Oakland, died after a long illness, aged 80, May 5. He had long been active in the International Association of Electrical Inspectors, was Southwestern Section president in 1927 and IAEI national president in 1946-47.

Moved

Idaho State electrical inspectors have been moved. Glen Davis, who had been in the Idaho Falls-Pocatello or District 5, was moved to Twin Falls, District 4 and Darrell Wood appointed inspector for District 5.

Appointed

D. D. "Pat" O'Leary will become superintendent of electricity for the city of Berkeley June 16, upon the retirement of Dan Wallace. O'Leary has been chief electrical inspector for the building department. John Thompson succeeds him in that position until examinations are held.

Vote to decide

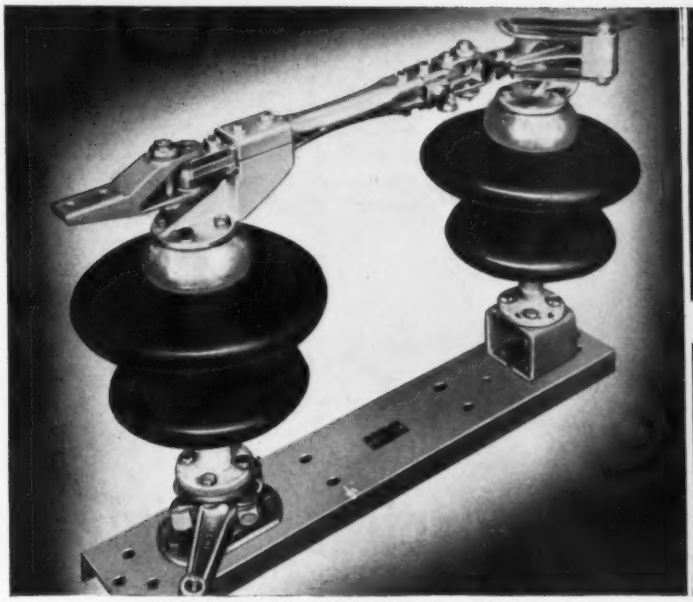
Questionnaires for a vote on the redistricting of the States of Washington, Oregon and northern Idaho into District 6, making California and Nevada a new District 9, are being sent to the NECA chapters by District Vice-president Wes Grasle of Portland.

Join

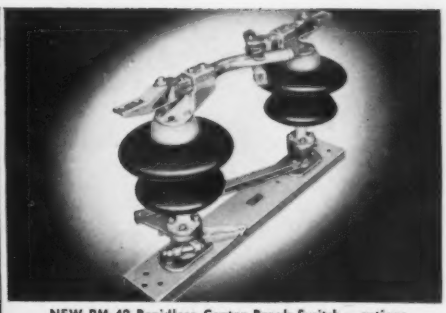
A new luminous ceiling development has been that since the agreement between the IBEW and Carpenters Union acoustical contractors have gone into the electrical fixture business and have taken out electrical contractors' licenses for the installation of luminous ceilings. They are asking the IBEW for electricians to do this work.

Same in Europe?

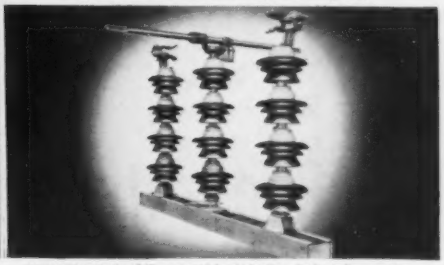
Ed Buttner, Scott-Buttner Electric, Oakland, and world traveler, attended a convention of the International Association of Electrical Contractors in Rome recently. Among the subjects discussed, he reports, were the joint purchase of supplies by cooperatives of contractors. In Switzerland, he said, all supplies are bought through such a cooperative jobber. It was mentioned that in Cheyenne a similar group operates, to which one contractor asked, "How do they get their financing?"



NEW PMB-40 Braidless Side Break Switch — ratings from 7.2 kv to 161 kv; 400, 600, and 1200 amperes.



NEW PM-42 Braidless Center Break Switch — ratings from 7.2 kv to 230 kv; 600, 1200 amperes.



NEW PM-40 Braidless Double Side Break Switch — ratings from 69-H kv to 330 kv; 600, 1200 and 1600 amperes.

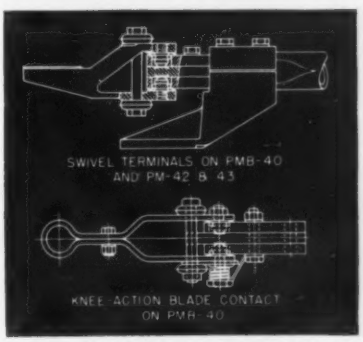
NEW Delta-Star braidless side-break switches feature on-center contacts and low-friction swivels

Delta-Star's new rotating contact design eliminates the serious problem of excessive friction at the swivel terminals. On PMB-40 and PM-40 Switches, the high-pressure contact is placed directly on the center of the rotating insulator. Heavy pressure at the swivel contact does not develop torsional resistance. The swivel terminal is supported by two pairs of ball bearings located out of the current path.

Blade and contact construction is patterned after Delta-Star's highly-regarded MK-40 vertical-break switches. Hard drawn copper contact shoes with silver inlays are backed by non-current carrying, beryllium copper leaf springs. Large deflections assure uniform contact pressure after years of wear. Rotating hinge and knee action blade contacts, with silver button pressure units, are factory-sealed.

Bearings are rustless, greaseless—completely sealed against the elements—require no lubrication during the lifetime of the switch. Double race balls and races are stainless steel.

Here are horizontal-break *braidless* switches that operate effectively, successfully and most satisfactorily —if operated only rarely or frequently. They are yours *now* for improved operating efficiency.



Diagrams above show construction details of the low friction swivel terminal contacts.

For all the facts, call your nearby Delta-Star representative

DELTA-STAR ELECTRIC DIVISION

H. K. PORTER COMPANY, INC.

2437 Fulton Street · Chicago 12, Illinois · District offices in principal cities

"... this program will do a tremendous job"

"I personally believe that the Live Better Elecrically program is going to increase the over-all interest of the public in the benefits our industry has to offer. This unquestionably will stimulate the sale of appliances and load growth."

Walter McKie,
General Sales Manager,
Rochester Gas and Electric Corporation

How Rochester Gas and Electric is building with LIVE BETTER...

Today over 300 electric utilities throughout the country are actively participating in the LIVE BETTER... *Electrically* program. Here's how one combination utility—Rochester Gas and Electric—is using this long-range, industry-wide promotion to get maximum results for its own residential load-building efforts.

Every electrical promotional activity at RG&E is being launched under the banner of "LIVE BETTER ... *Electrically*." This theme dominates and unifies RG&E's dealer program, Housepower program, home-appliance program, farm program, architects and builders promotion, home-economics program, model-home promotion, advertising, and Electrical Association activity.

Important to the success of this far-flung activity is the liberal use made of promotional materials available from LIVE BETTER ... *Electrically*. RG&E is distributing copies of the 72-page consumer idea book. sending copies of "How to Help Home Owners LIVE BETTER ... *Electrically*" to its trade allies, using banners, streamers, counter cards, mats with the slogan and emblem.

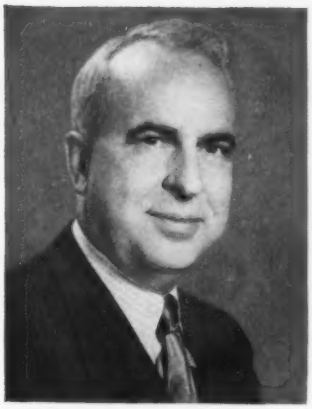
These materials are available to every electric utility in America. The impact of national LIVE BETTER... *Electrically* consumer advertising in magazines and network television shows, plus industry-wide trade advertising, helps insure the success of this cooperative effort. Those utilities—like Rochester Gas and Electric—which are working for and getting the cooperation of trade allies in their area will reap the greatest rewards.

Consumer idea book, "New Step-by-Step Ideas to help you LIVE BETTER ... *Electrically*," will be offered in RG&E's editorial-style advertisements to run in local newspapers.

These are signs of LOW HOUSEPOWER
HOW TO FREEZE FRESH FRUITS AND VEGETABLES
Why "Sweat Out" another summer
...AIR CONDITION now!

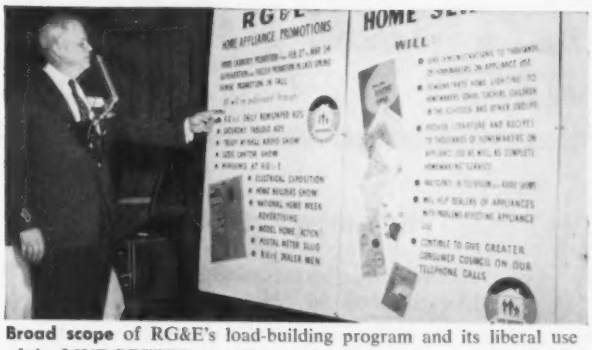
Running headline, "LIVE BETTER... *Electrically*," provides an "umbrella" theme for pending newspaper advertisements of The Electrical Association of Rochester, Inc. These advertisements will appear every week for 50 weeks.

Home economists in the Home Economics & Lighting Dept.—like Miss Marcia Dowd—tell women's groups of the many ways they can LIVE BETTER ... *Electrically*.



residential load *Electrically*

LIVE BETTER ELECTRICALLY



Broad scope of RG&E's load-building program and its liberal use of the LIVE BETTER . . . *Electrically* theme and materials are indicated by Assistant General Sales Manager Graydon Curtis.

ELECTRICAL ASSOCIATION OF ROCHESTER
WILL BE ELECTRICAL EXPOSITION FEB. 18 TO 25
PLAN OF ACTION
LIVE BETTER ...Electrically

LIVE BETTER . . . *Electrically* is the theme of the Adequate Wiring Bureau's promotion and appears as the theme of Electrical Exposition. Poster shows how RG&E works with dealers and distributors.

Home-modernizing promotion, of particular interest to architects and builders. This activity, as well as the RG&E Farm Department program, will tie in with the LIVE BETTER . . . *Electrically* campaign.

Appliance exhibits, featuring high-wattage appliances like washers, dryers, automatic water heaters use the LIVE BETTER . . . *Electrically* theme as a prominent identifying and unifying device. This is another example of how RG&E gets maximum mileage out of the program.

At Electrical Exposition, Rochester Gas and Electric exhibit dramatizes the decorative effects homemakers can achieve with lighting – and an illuminated valance-type display spells out the exhibit slogan: "LIVE BETTER . . . *Electrically*."

ELECTRICAL WEST

Informed Reading

TRY to set aside time for relaxed, thoughtful reading of the convention reports in this issue. Insofar as the editors could make them, they represent the synthesis of a full year's work of hundreds of people working in concert in committee activities of the various industry organizations and associations.

This issue may not present the glamour of big physical projects but has the stimulus of big thinking and advanced planning for growth and development of the industry, your company and YOU.

Human Values Recognized

THOSE who were privileged to hear the excellent program presented at the 39th annual convention of the Pacific Coast Electrical Assn. might well conclude that business is moving into a new era. A heart-warming highlight of the program was the emphasis that practically every speaker gave either to some facet of the human side of modern business or the spiritual growth of the nation. Business leadership is, at last, speaking out concerning its responsibilities to the aims and ambitions of the individual as well as to the growth and progress of the company.

Such an attitude accents the two-fold purpose of the American system. On the materialistic side, by giving workers a larger share of the profits resulting from the production of more and better goods at lower prices, the system has created an unexcelled living standard for the people of this nation. On the spiritual side, this dynamic production economy has demonstrated it can operate without destroying the human values that are the real strength of the nation. Individual security, personal recognition, opportunities for advancement, the sense of individual and group accomplishment—all and more are part of the thinking and planning of business leadership today.

That has been true in the past, also, but it has been only recently that such objectives have come to the forefront in the spoken and printed word of the nation's industrial leaders. Recognition of this attitude on the part of management may take time to percolate through all strata of employees. However, a broad appreciation on the part of the general public that the American business system is trying to create human as well as material values could be the strongest bulwarks against the threats to the freedoms that all of us enjoy and cherish. We need more business spokesmen who will stand up and talk about ideals rather than ideas as they did in Las Vegas.

What's *Your* Domestic Rate?

THE chief executive of one of the electrical industry's prominent manufacturing companies has been making a one-man personal survey on a subject important to our industry's development. This little game involves asking his associates, employees, customers and other friends the simple question: "How much does your electricity cost?"

The rather appalling result is that hardly anyone can tell him what they pay for this important commodity. It may be that the present-day cost of electricity is such a small portion of the family budget that nobody cares any more. On the other hand, this executive feels (and we concur) that there are still a lot of families left in the United States that still have to question the operating cost of an appliance before they make the capital outlay for it.

Everyone who makes his living from the electrical industry would do well to know the exact price of its end product, energy, in his own particular community. Memorizing a residential rate schedule is not an arduous task and the knowledge might help sell an appliance when someone asks: "How much does it cost to operate a water heater, an air conditioner or a television set?" After all, we of the industry should be as authoritative about the services it provides and the costs involved as anyone.

Every little thing that is done to help promote the sale of an energy-using device is reflected in the growth of industry right from the service entrance switch back to the mine and smelter. While most of us are not en-

EDITORIAL VIEWS

gaged in direct selling activities, all of us are able to help in the industry's growth through the example of using electricity to the fullest extent possible in our daily living, by being able to discuss our industry's services and objectives intelligently with our friends and neighbors, and by boosting our industry at every opportunity. One small part of this is knowing the cost of our product. You might find it amusing to try that same question with your immediate associates in the industry? Incidentally, what's *your* domestic rate?

Symbols of Integrity

THROUGH the course of years, a good many of our more avid readers perhaps have noticed the two symbols that are displayed on the "masthead" of this publication. These designate our membership in two associations—are, in fact, symbols of integrity. Their meaning to you, the reader, is both real and important.

The ABC symbol, for example, tells you that we are members of the Audit Bureau of Circulations; and, thus, that our subscription lists are audited and verified semiannually by unbiased and competent auditors. In addition to guaranteeing to our advertisers a verified, completely honest circulation, this symbol also proclaims that all of our subscribers are treated alike. And treated fairly. Circulation sales methods are rigidly controlled and must meet the highest standards of the profession.

The ABP symbol signifies membership in our industry's trade association—the Associated Business Publications; a membership, incidentally, which is partially predicated upon our adherence to the circulation methods and ethics evidenced by our ABC membership.

The Associated Business Publications, celebrating its Golden Anniversary in 1956, has worked for 50 years to bring about the evolution of business papers from their humble beginnings to the powerful force they are today.

As one of the 162 publications belonging to ABP, we pledge ourselves to adhere to a Code of Ethics and Standards of Practice which means, among many other important things, that we are working constantly to improve our services to our readers. While everything contained in this code and standards of practice is important to good publishing—and therefore publishing integrity—its initial principle is the one that gives the ABP symbol its real meaning to you, the reader.

As the Associated Business Publications celebrates its Golden Anniversary, we take this opportunity to repledge our support of this first principle to "consider, first, the interests of the subscriber."

The Truth About Living Costs

MOST persons still have the impression that prices keep rising faster than incomes, and you still hear a lot about the "high cost of living," the Chamber of Commerce of the United States points out.

Of course, says the chamber, prices have gone up. But the remarkable fact is that manufacturing wages have gone up faster. A fact too little realized.

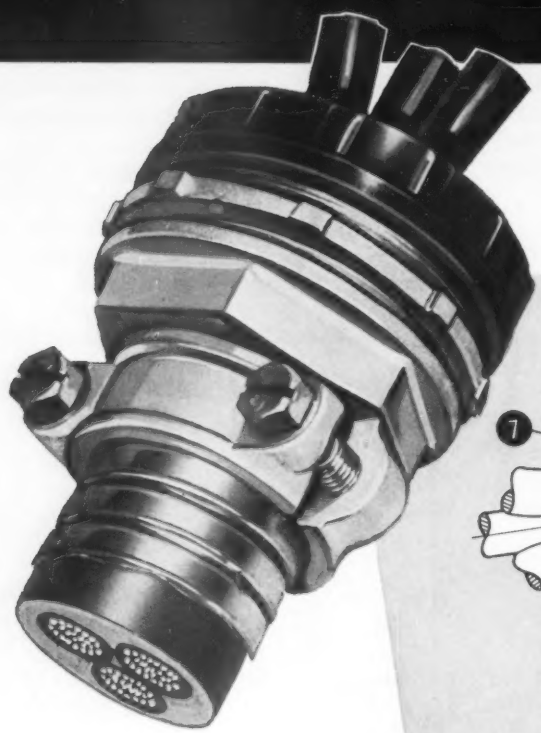
From 1914 to 1955, for example, the Consumer Price Index rose from 42.9 to 114.50 or by about 167%. But average weekly earnings in manufacturing, the chamber notes, rose from $11.01 to $76.52 or 59%. In the recent period 1939 to 1955, the consumer price index increased by 29.9% while average weekly earnings increased by 221%.

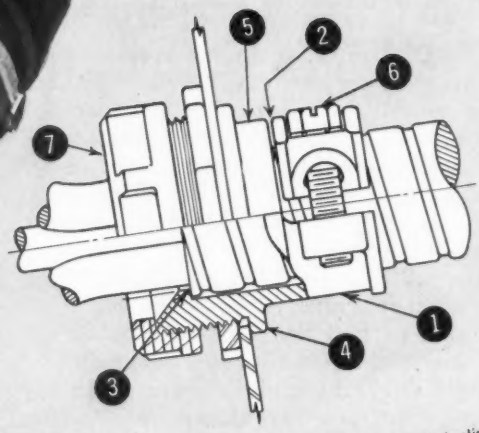
Further, the wage rates cited do not include many of the so-called fringe benefits—vacations with pay, pension and welfare plans—which have added so much to employer costs, the chamber emphasizes.

And so the amazing fact is that American business has been able to hold price increases far below wage increases—a fact which the chamber believes is a real tribute to competitive enterprise efficiency.—U. S. Chamber of Commerce.

from every angle–

O.Z. TYPE "PK" is the clamp





1. Cadmium-plated malleable iron body and clamping cap for strength and corrosion resistance.
2. Armor clamped several turns from end.
3. Smooth armor stop assures termination at proper point—protects cable insulation from sharp, rough edges.
4. Flange on body eliminates locknut outside of cabinet.
5. Large hex facilitates installation.
6. Slotted hex-head clamping bolts can be tightened by wrench or screwdriver.
7. Strong O.Z. Type A hi-impact phenolic insulating bushing.

Here is a clamp designed specifically to meet the requirements of interlocked armor cable applications. The O.Z. Type "PK" Clamp provides exceptional speed and ease of installation, whether your cable enters the cabinet from the top, bottom or side. It is designed with ample thread length for use with all standard conduit fittings and terminators from 1" to 5" and is available for interlocked armor cable ranging in size from .99" to 4.38" O.D.

Call your local O.Z. Distributor.

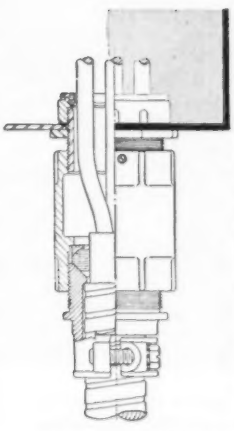
CHICAGO OFFICE & WAREHOUSE:
406 So. Cicero Ave.
ESterbrook 9-0326

SAN FRANCISCO PLANT:
749 Bryant St.
GArfield 1-7846

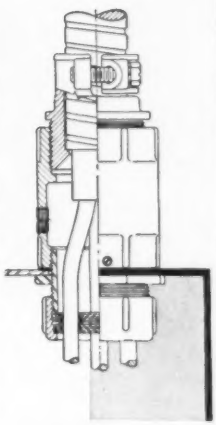
for ARMORED CABLE

combines with standard O.Z. fittings for any terminating or splicing job involving INTERLOCKED ARMOR CABLE.

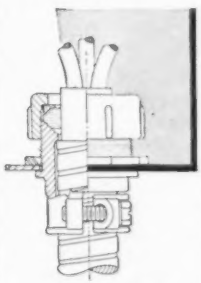
Seals cable ends to protect insulation against moisture and other contaminators—can also be used with threaded hubs and bosses to provide watertight cable entrances.



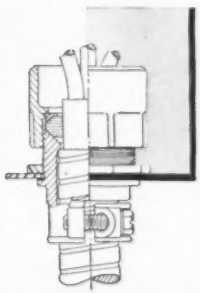
TYPE "PKC"
Terminator for interlocked armor cable entering bottom of cabinet.



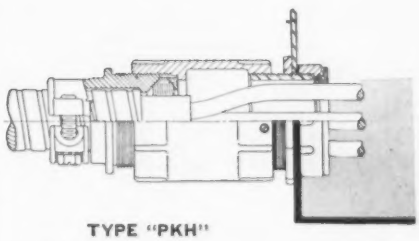
TYPE "PKT"
Terminator for interlocked armor cable entering top of cabinet.



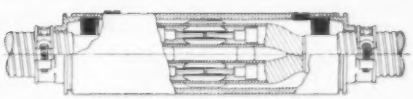
TYPE "PKG"
Sealing bushing for interlocked armor cable entering a cabinet.



TYPE "PKF"
Compound bushing for interlocked armor cable entering bottom of cabinet.



TYPE "PKH"
Terminator for interlocked armor cable entering side of cabinet.



TYPE "PKS-J"
Splicing chamber for interlocked armor cable.

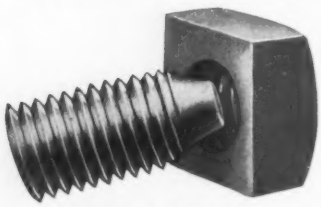
O.Z. ELECTRICAL MANUFACTURING CO., INC.
262 BOND STREET • BROOKLYN 17, N. Y.

CAST IRON BOXES
CABLE TERMINATORS
POWER CONNECTORS
SOLDERLESS CONNECTORS
GROUNDING DEVICES
CONDUIT FITTINGS

DEPENDABLE POLE LINE CONSTRUCTION *DEMANDS*

Cross Arm Braces

"HANDIDRIVE" Pole Steps



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HONOLULU, T.H.

Public power engineers

Talk Operating Ideas

Shade tree problems, metering of distribution feeders, a-c analyzers for small systems and joint use of poles were important subjects discussed by the 152 engineers and operators representing 41 public power utilities at the annual Engineering and Operating Section meeting of the Northwest Public Power Assn. held at Wenatchee, Wash., May 10-11.

Speaking of the tree problem, W. Riley Matsler, superintendent of parks, Eugene, Ore., asked the question, "Why don't utility companies help shoulder the burden by assisting in setting up a street plan, which will not only meet their requirements but also the requirements of the community?" He was referring to selective planting of trees that would beautify the community but not grow so high that they would interfere with utility lines. In outlining tree trimming practices of Seattle City Light, Robert K. Walker said, "Although Seattle City Light does not have advisory service on tree planting, we believe that a financial saving and much good will could be realized by a proper program of education on tree planting, particularly in newly developed areas." Tree trimming costs the utility about $60,000 a year, he said.

Metering of distribution substations and feeders to provide information for the economical planning, design and operation of the system is recommended by R. J. Snyder and G. P. Tupper, Central Lincoln PUD, Newport, Ore. Indicating and thermal ammeters will provide the minimum essential information at the lowest cost of approximately $168 per feeder, not including installation. These may be operated from existing bushing current transformers under ordinary conditions. For more detailed information, the most economical solution appears to be a complete set of portable graphic meters, costing not in excess of $1,250, they said.

Robert R. Michael, Oregon State College, described the a-c analyzer installed a year ago by the Eugene Water & Electric Board and outlined its many uses to show that such moderate-sized utilities may find a-c analyzers a profitable investment. Studies made include fault currents, load division and voltage regulation. At present the analyzer is being used to investigate the relative merits of several possible system additions.

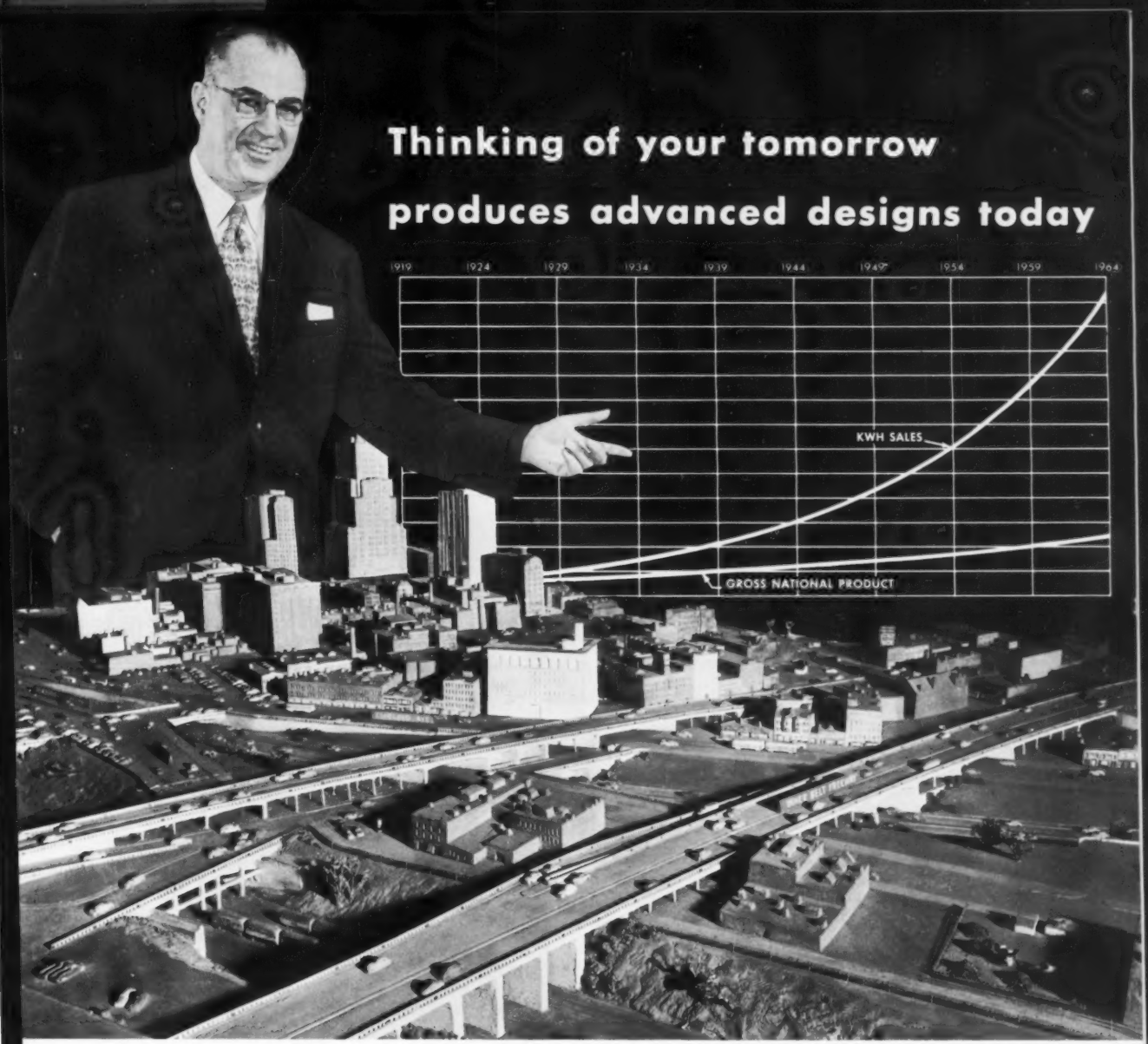
Economics of joint pole use, administration of agreements and reframing poles for joint use were covered in a symposium on joint use of poles. Practice of the Clark County PUD was outlined by H. A. Banke. In general a saving of about 50% can be made by joint use, either on an ownership basis or contract rental basis. J. R. Bonnin, Cowlitz County PUD, stressed the importance of proper records, proper administration and mutual tolerance in making joint pole agreements work successfully. J. F. Clark, Eugene Water & Electric Board, said that preframing poles for joint use is an excellent and economical practice, if the poles are full-length treated.

On the subject of low-cost underground, J. C. Whaley, Seattle City Light, said that as our residential loads reach 3-4 kw diversified demand per customer, serious consideration should be given to serving the customer at perhaps 480 v, single- or three-phase, or even higher voltage. It might be possible to develop direct customer feeding at primary voltage with a complete packaged metal-clad unit. After determining the additional increments of cost for any residential underground system, Whaley feels that financing should be by proper customer surcharge, which might run from $8 to $20 a month depending upon circumstances.

Several other papers dealt with distribution practice and there were four on communication. F. John Albi, Seattle City Light, said the proper planning of jobs and the use of necessary devices, coupled with the exercise of good judgment, will minimize accidents on utility construction work.

Gus Norwood, executive secretary of the association, speaking on development of the Columbia, said, "as power needs increase, as our planning technology improves and as we use the Columbia for peaking power on top of an atomic energy base load system, we should find ourselves approaching and possibly exceeding a 50,000,000-kw generator installation on the Columbia River."

Robert Gillette of Grant County PUD succeeds Alan Hunnicutt as chairman of the E & O Section. The next meeting is in Tacoma, May 1957.

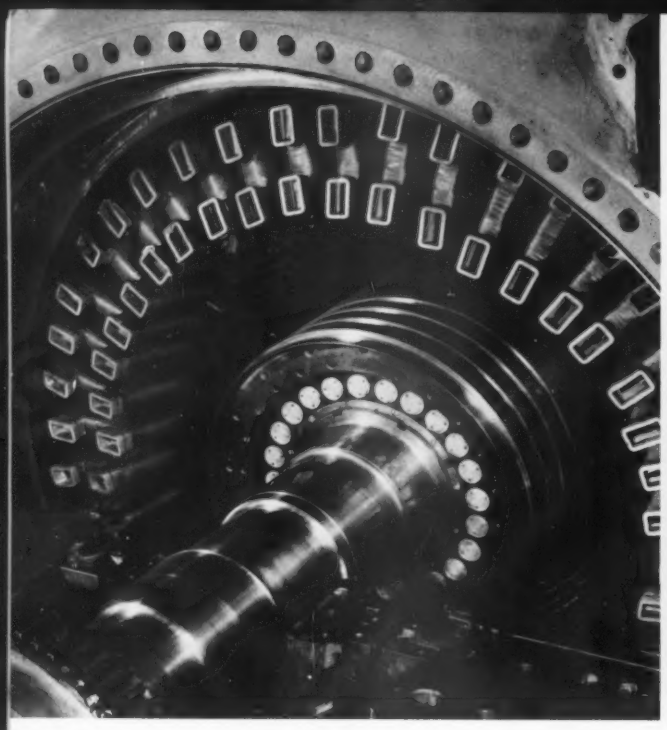


A. C. Monteith, Vice President Apparatus Products, presents some of the Westinghouse achievements in apparatus design . . . features that will help you with your load growth problems.

For a quick look at some of these Westinghouse product developments, see the next three pages.

WATCH WESTINGHOUSE!

*WHERE **BIG** THINGS ARE HAPPENING FOR **YOU!***

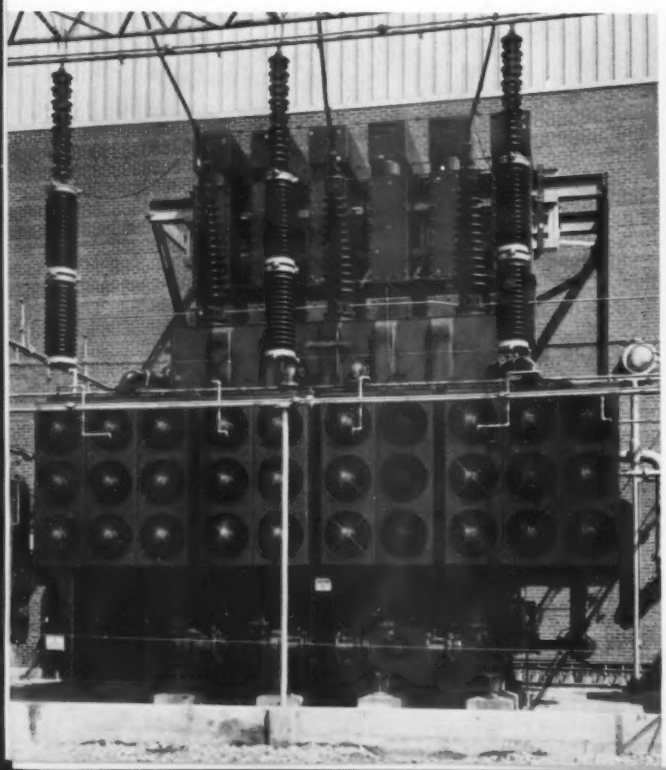


Innercooling Both Stator and Rotor, a Westinghouse first, has made it possible to double generator ratings compared with conventionally cooled units, reducing size, weight.

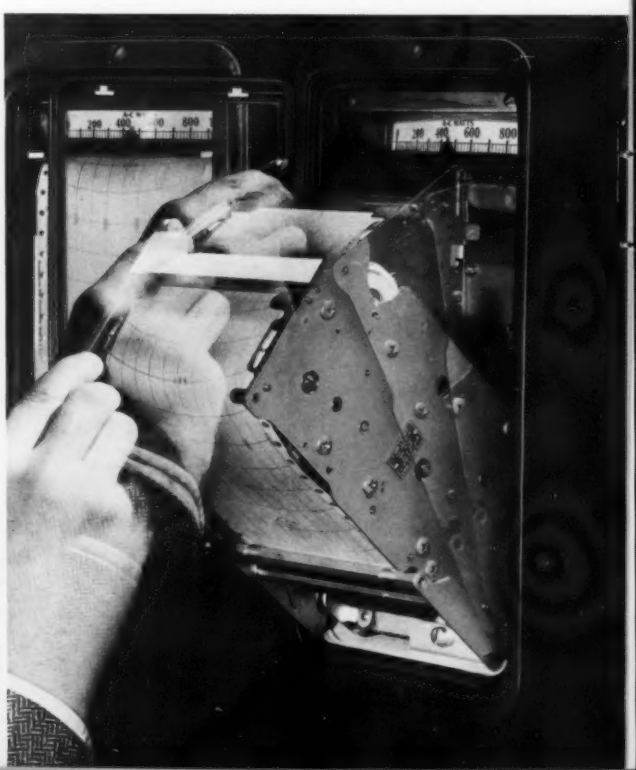
Higher Mechanical Efficiency, up to 92%, is achieved by airfoil blading . . . exclusive in Westinghouse-Sturtevant® centrifugal blowers, the most efficient fans available.

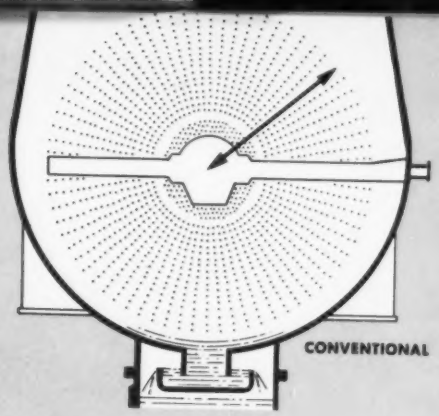
WATCH WESTINGHOUSE

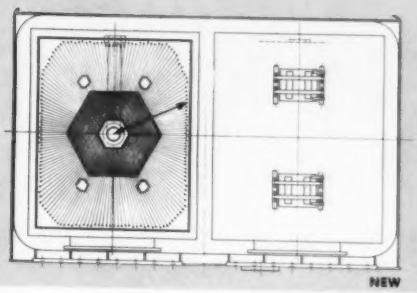
At 315,000 Kva, Largest Capacity 3-phase generator transformer ever built; smaller, lighter per kva than any other transformer. Shipped upright; on-line at Detroit Edison Co.



Twice the Torque of other designs; gives the new Westinghouse Type 44 Recorder faster response, higher fidelity. Accessibility of parts makes it the most convenient to use.







Occupies Less Space while maintaining performance; a dramatic advantage of the exclusive new Twin Bank Condenser, accomplished by dividing steam flow into two paths.

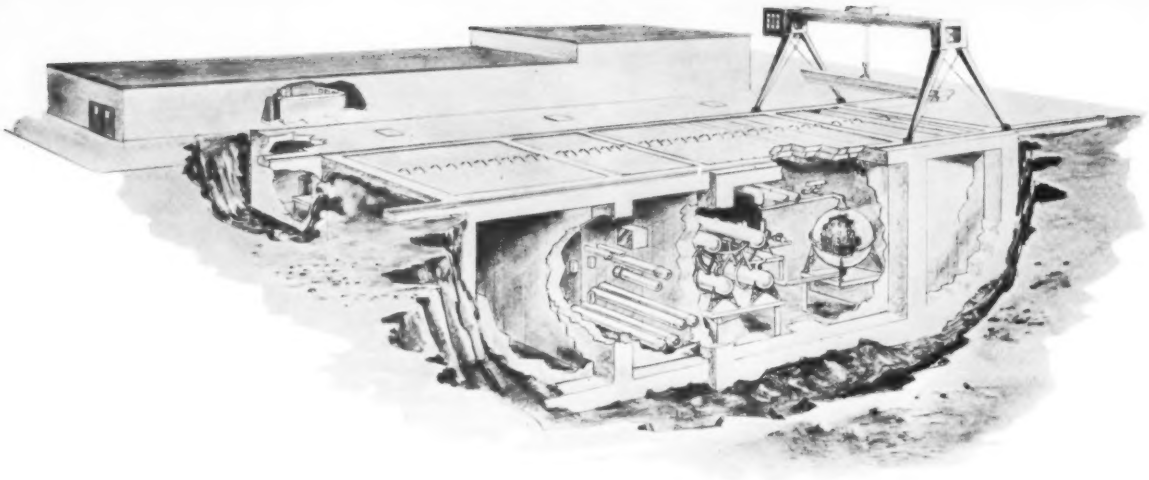
Annual Savings of $50,000 per thousand megawatts can be realized with the revolutionary new Economic Dispatch Computer, recently developed by Westinghouse.

*WHERE **BIG** THINGS ARE HAPPENING FOR **YOU!***

Wrapped-in Dependability for powerhouse motors. That's Westinghouse Thermalastic® insulation, exclusive and still unequaled where moisture, dust and heat are problems.

World's Largest Breaker, rated 330-kv, 25,000,000-kva interrupting capacity. A Westinghouse development made possible by "Watchcase*" design, "De-ion®" grid interrupters.

*Trademark



First in Atomic Power, Westinghouse is now pushing forward the development of a very promising aqueous homogeneous nuclear power reactor design, in partnership with the Pennsylvania Power and Light Company.

World's Most Efficient Kilowatt Producer—New supercritical pressure turbine-generator greatly reduces fuel consumption; 5000 psi, 1200°F are highest pressure and temperature ever applied commercially.

The panorama of product development shown here is just a glimpse of creative engineering at Westinghouse . . . and what it is doing for you. New concepts of power generation are inspiring new standards of apparatus capability—higher capacity, greater durability and efficiency, new sources of power. Prime objective: to help utilities meet the fantastic growth projected for the next 20 years.

For specific assistance, get in touch with your Westinghouse sales engineer, or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. CP-1038

WATCH WESTINGHOUSE!

*WHERE **BIG** THINGS ARE HAPPENING FOR **YOU!***

A MESSAGE TO AMERICAN INDUSTRY • SECOND OF A SPECIAL SERIES

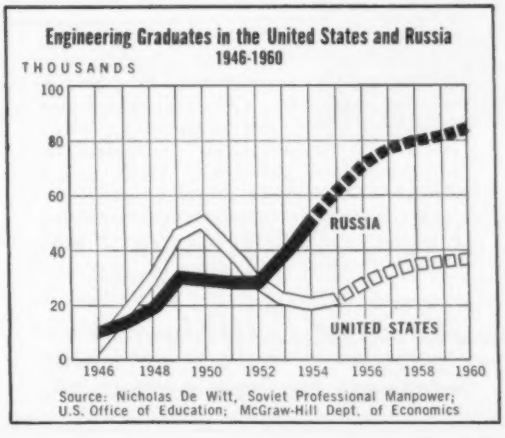
THE SHORTAGE OF SCIENTISTS AND ENGINEERS:

Are We Losing the Race with Russia?

THERE is new confidence in the Kremlin. One key reason is expressed in a recent boast of Communist Party Secretary Khrushchev: **"The capitalists always regard our people as being backward, but today we have more engineers and more supporting engineering technical personnel than any capitalist country."** He promised that this lead would be widened and that communism would be victorious without war.

This boast cannot be dismissed as communist propaganda. Admiral Lewis L. Strauss, chairman of the U. S. Atomic Energy Commission, has warned: **"In five years our lead in the training of scientists and engineers may be wiped out, and in ten years we could be hopelessly outstripped. Unless immediate steps are taken to correct it, a situation, already dangerous, within less than a decade could become disastrous."**

This second editorial in a series on the shortage of scientists and engineers is designed to explore as carefully as possible the facts and the implications of the new emphasis on technical training in the Soviet Union. It draws heavily from the authoritative book *Soviet Professional Manpower*, prepared for the National Academy of Sciences and the National Research Council by Nicholas DeWitt of the Russian Research Center of Harvard and released recently by the National Science Foundation.



Trend Is Against Us

If the Soviet Union already has a lead in technical manpower, it is not very great. Both the United States and Russia now have around a million scientists and engineers. About a third of the Russian engineers were trained on inferior pre-1935 standards. **It's the trend — shown in the chart — that is alarming.**

Over the last five years we have turned out only 142,000 engineers, compared to an estimated 216,000 in Russia. In 1955 our output was around 23,000 compared to their 63,000. Over the next five years our projected output is 153,000, against at least 400,000 in Russia. There will be an additional 150,000 or more in the satellites and Red China.

In Russia, 30% of the college students are in engineering, compared to 8% here. Another 30% or more take degrees in natural sciences. Moreover, unlike ourselves, the Russians are

ploughing back a large proportion of their science graduates into teaching, which implies a rapid buildup in the future.

Quality As Well As Quantity

It would be foolhardy to assume that these new Russian graduates are inferior to ours in the quality of their technical training. They start out with much more intensive mathematical and scientific preparation at the high school level. They study harder and longer in college, with more laboratory work and more practical training. Their courses and textbooks seem to be as thorough as ours. Even though the Russian graduates may be overspecialized, they get results.

These results have been striking. The Russians developed both A-bombs and H-bombs faster than we expected, and it's not certain that they had to rely much on espionage. They pushed ahead of us for a while in jet fighter design, and they showed up with a fleet of long-range bombers well ahead of schedule. They are crowding us on nuclear power, electronics and automation. There are grave fears that they have established a lead in the vital field of military rockets.

The goal of Soviet scientific manpower policy includes not only weapon supremacy but also leadership of the neutral and uncommitted areas of Asia, Africa and the Middle East. The Soviet leaders may be bluffing in their offers to export capital, but they are preparing to export Russian scientific and technical know-how in a big way.

How They Do It

The Russians are determined to win the race for scientific supremacy, and they do not count the cost. **They pay their scientists and engineers salaries that seem fantastic when compared with other Soviet incomes.**

Senior professors, research scientists and top engineers are a major segment of the Russian elite. Their incomes are frequently six to ten times the average industrial wage. (In the U. S. six to ten times the average industrial wage would be $25,000 to $40,000 a year.) Housing and other privileges are correspondingly lavish. While preaching equality, the Soviets use capitalistic incentives far more boldly than we do. Indeed, practicing engineers and scientists have been complaining about the exalted status of professors and top research people, and salary scales are now being adjusted to give greater emphasis to practical results.

The Russians are also generous in their aids to education. Tuition has just been made free at all levels. Undergraduates receive 200 to 500 rubles a month and graduate students 800 rubles (about equal to an industrial wage) to cover living expenses. The biggest stipends go to science and engineering students. College students are deferred from military service, and engineers and scientists often enjoy continued deferment even after graduation.

Finally, the Soviet leaders can channel engineers and scientists — and all other human and material resources — into any area they choose. And the areas the Soviet leaders choose are predominantly those that contribute to military or political objectives, rather than to a better life for consumers.

What's Our Answer?

We are certainly not going to adopt Soviet methods. We do not want scientific robots, but free men, able to understand and add to our democratic heritage. At the same time, our world leadership in technology — and perhaps even our survival as a nation — will be threatened if we allow ourselves to lag far behind Russia in the training of scientists and engineers. Ways to keep the United States in the race will be discussed in a later editorial in this series.

This is one of a series of editorials prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments of particular concern to the business and professional community served by our industrial and technical publications.

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Donald C. McGraw

PRESIDENT

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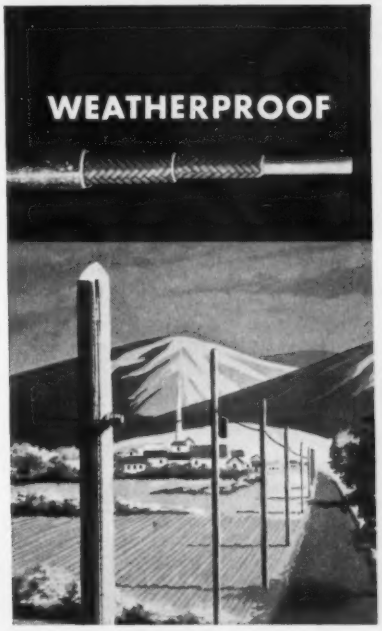

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ALECTRAL

FOR ALL ALUMINUM CONDUCTOR REQUIREMENTS

Built into all ALECTRAL products are 75 years of General Cable's engineering and manufacturing experience. In this record are more than 25 years of successful performance of *insulated* aluminum conductors marketed as ALECTRAL. Available in ALL-ALUMINUM, ACSR, WEATHERPROOF and with RUBBER and THERMOPLASTIC insulations. A sound and economical investment for all voltage ranges.

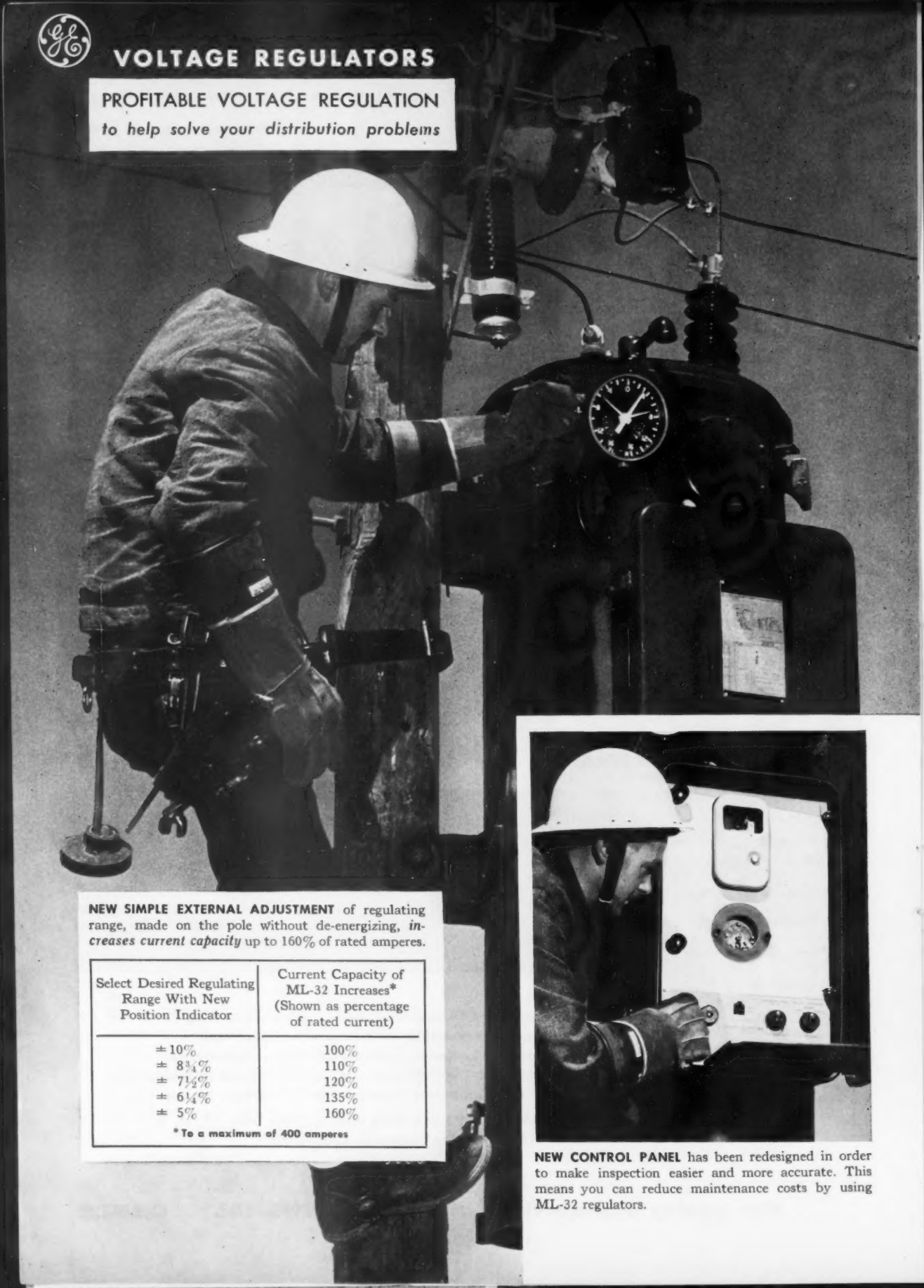
GENERAL CABLE CORPORATION, 420 Lexington Avenue, New York 17, N. Y.
Offices and Distribution Centers Coast-to-Coast

For quality and service...SPECIFY GENERAL CABLE

VOLTAGE REGULATORS

PROFITABLE VOLTAGE REGULATION

to help solve your distribution problems



NEW SIMPLE EXTERNAL ADJUSTMENT of regulating range, made on the pole without de-energizing, *increases current capacity* up to 160% of rated amperes.

Select Desired Regulating Range With New Position Indicator	Current Capacity of ML-32 Increases* (Shown as percentage of rated current)
± 10%	100%
± 8¾%	110%
± 7½%	120%
± 6¼%	135%
± 5%	160%

***To a maximum of 400 amperes**

NEW CONTROL PANEL has been redesigned in order to make inspection easier and more accurate. This means you can reduce maintenance costs by using ML-32 regulators.

With NEW G-E LOAD BONUS POSITION INDICATOR you can now

INCREASE CAPACITY WITH REGULATOR ENERGIZED

NEW LOAD BONUS switch located in the position indicator of the redesigned General Electric ML-32 step voltage regulator now permits simple, one-man, on-the-pole adjustment of current capacity and regulating range *without de-energizing* the regulator. With "raise" and "lower" settings independently adjustable, current capacity up to 160% of normal at ±5% regulation is available up to 400 ampere maximum. *Load Bonus is now standard equipment on all G-E pole and station-type single-phase step regulators.*

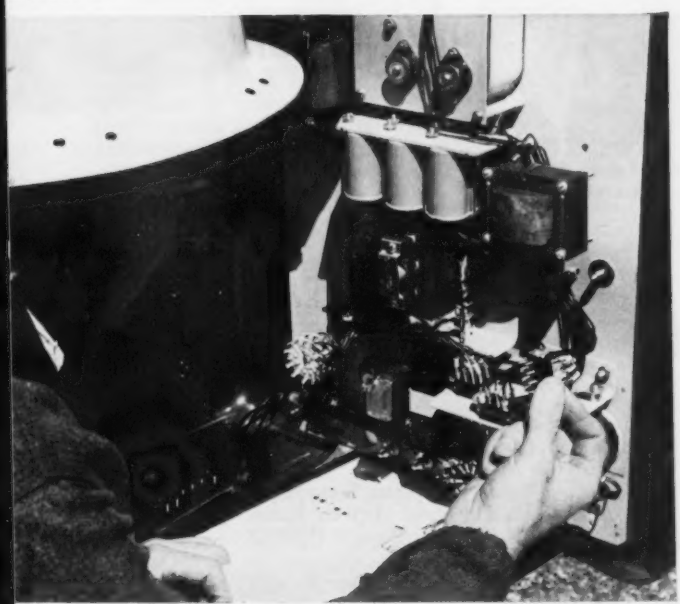
OTHER NEW FEATURES that mean increased dependability, accuracy, and economy include quickly interchangeable plug-in control components; internal channel design for easier, safer untanking by one man; and a larger, clearer tap-position indicator for improved visibility. These features, shown in detail on these pages, make this the most advanced step regulator on the market today.

UP TO 50% SAVING in first cost, compared with all other types of feeder or station regulating equipment, is an additional benefit of the new G-E ML-32 step regulator. A complete line is available —25 to 167 kva and in five voltage classes.

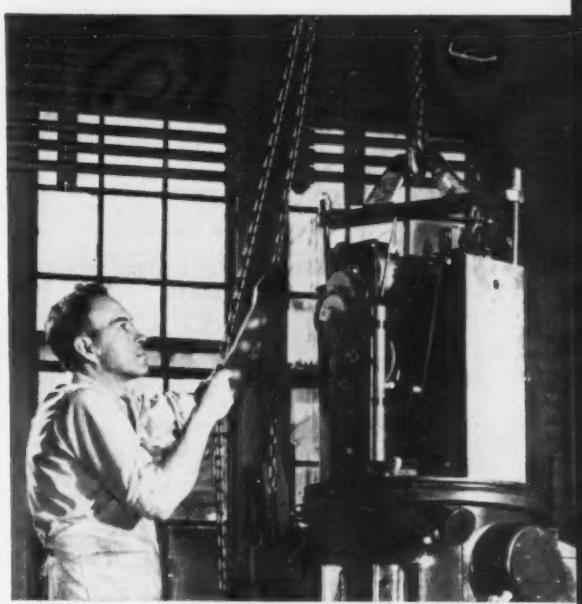
COMPLETE INFORMATION is contained in a new bulletin, GEA-5752. For your copy, contact your G-E Apparatus Sales Representative, or write to General Electric Company, Section 423-14, Schenectady 5, N. Y.

Progress Is Our Most Important Product

GENERAL ELECTRIC



NEW PLUG-IN COMPONENTS mean faster, more economical maintenance. Voltage-regulating relay, line-drop compensator, time-delay relay, and the control panel itself all have quickly removable plug-in connectors.



NEW EASY UNTANKING speeds maintenance. Entire regulator is a one-piece assembly mounted between protective supporting channels. Lifting eyes at top of channels allow quick, safe removal by one man.

Melanie Kahane, designer of the Westinghouse Confection Color Kitchens, is shown in San Francisco—at left with W. M. Kline Jr. of the manufacturer's custom kitchen division in the Frosting Pink kitchen and at right in the Cinnamon de luxe custom model

The Mint Aqua kitchen shows skillful arrangement of free-standing appliances. A potential "awkward corner" becomes the laundry area, concealed by a rolling screen when not in use

Decorators and public are given

Kitchen Ideas

Melanie Kahane is a designer who believes that color can be as sterile as white if it is not used with skill and imagination.

When it goes into the kitchen, she thinks it should enhance the food and should be easy to live with since women "can't change kitchens every two years."

Her ideas on color coordination and some practical hints in kitchen planning were brought to more than 35,000 people who attended the recent American Institute of Decorators Show in San Francisco's Civic Auditorium.

Westinghouse, only major appliance manufacturer to display in the AID show, presented four Confection Color Kitchens, designed by Miss Kahane. They ranged in price from $2,500 to $9,000 including appliances and cabinet work; were designed to show use of both built-in and free-standing equipment. How installation of built-ins could be varied to suit space limitations was emphasized.

Whether the spectator was planning to remodel or build from scratch, he could find ideas in the four model kitchens. Plans were available to anyone who wanted them.

The de luxe kitchen, sold before the show closed, combined nougat grey appliances with walnut veneer paneling and white Micarta counter tops. It featured an appliance center that provides for use of five electric table appliances at one time. This center has such conveniences as pull-out extension cords, outlets, automatic timer and selector and a panel of circuit breakers with reset switches.

A second kitchen combined pink and yellow; featured economical use of space. The fourth confining wall here becomes a divider holding a built-in oven on the kitchen side and the new 25-in. laundry units on the reverse, with the dryer mounted above the washer to conserve space. A built-in rotisserie is installed in the same divider wall. Other appliances in this kitchen are placed to save space and steps.

Similarly each of the other kitchens was used to show how to get around structural difficulties; how to install appliances effectively.

That the public was interested was clearly demonstrated. In a show that was filled with beauty and color, with the latest and most unusual in design, there was always a line waiting to go through the kitchens.

Western Utilities Win Awards

Ten Western power companies were among the winners in the Public Utilities Advertising Assn. awards for 1955. One, Washington Water Power Co., won six awards, including first in its classification for complete programs and first for a series of newspaper ads on a public relations subject.

Another, Hawaiian Electric Co., took a second for its complete program and three other awards, two of them (a single newspaper ad and an ad promoting use of electricity) firsts.

Also a four-award winner, B. C. Electric received firsts for its employee newspaper, window displays, interior display.

Others honored in their classifications: Arizona Public Service; Montana Power; Pacific Gas and Electric (two awards, one a first for car cards); Pacific Power & Light; Portland General Electric; Puget Sound Power & Light; Southern California Edison (a first in window displays).

Nearly 2,500 entries were submitted in the contest.

the New Importance of the RLM Label III

Send for Your Complimentary Copy of this 1956 Edition RLM Specifications Book

NOW MORE USEFUL THAN EVER!

New illumination data and complete up-to-dating of specifications for 36 different RLM industrial lighting units, make this new RLM Book more useful than ever to buyers, sellers and specifiers of industrial lighting equipment. An important change concerns the use—for the first time in RLM Specifications—of the Zonal Method of computing Coefficients of Utilization and illumination on room surfaces. The tables printed in this new edition are based on this method. You'll also find helpful light distribution curves on both incandescent and fluorescent equipment, including the new Semi-Direct fluorescent units, which direct 20% to 30% of the light upward. In addition, there are important changes in the RLM Standard Specifications covering materials, construction and photometric performance.

If your work is at all concerned with industrial lighting equipment, make sure you have this latest edition RLM Specifications Book—you'll recognize it by its green cover with the big red-and-black RLM Label. For your complimentary copy, write to the Institute, or use the coupon.

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326 W. Madison St., Chicago 6, Ill.

Please send me a copy of the new 1956 RLM Book. I understand there is no cost or obligation.

Name and title_____

Company_____

Address_____

City_____ Zone____ State_____

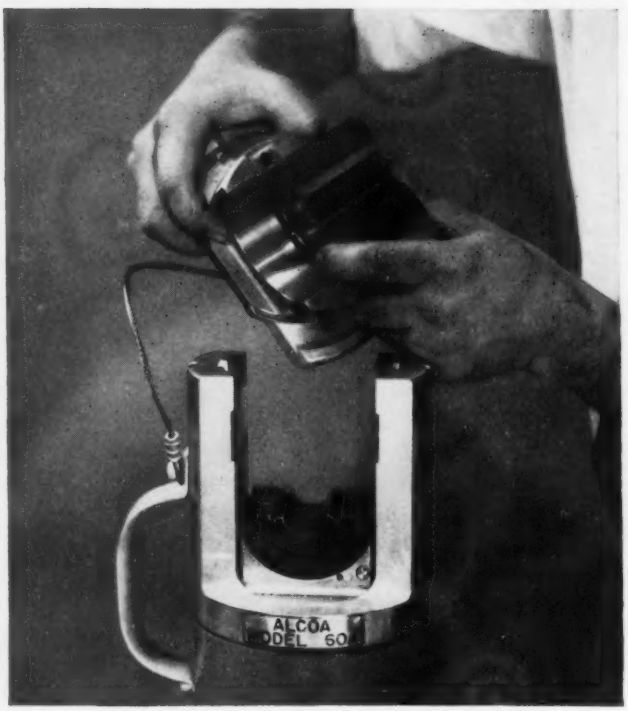
Most capacity per pound of weight with the

NEW ALCOA 60-TON

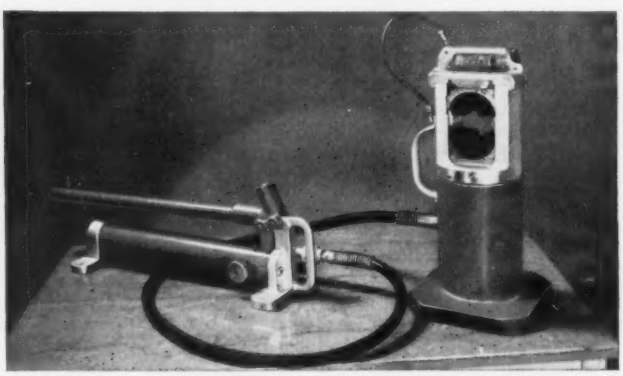
PORTABILITY is a main feature. Man on right carries compressor and stand; man in center has gasoline-engine pump, 60 pounds; man on left carries connecting hose and accessories.

FAST ACTING compressor made three complete compression joints on 3/0 ACSR, including cutting conductor and trimming aluminum strands, in 23 minutes.

TWO-STAGE HAND PUMP increases speed of compression. Unit pumps fast until die pressure builds up. Manual release valve plus spring-loaded piston gives quick retraction.



HEAD LOCKS in position, can't fall out, unlocks at press of finger. Dies also lock in position, release at push of button.



COMPRESSOR rests in simple stand for ground work. Accessible handles on pump and compressor simplify operating and carrying. Spring guards protect hose.

COMPRESSOR

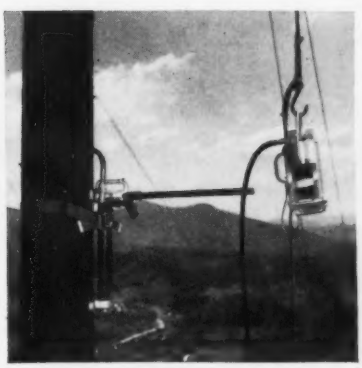
- **PORTABLE**
- **FAST ACTION**
- **LARGE RANGE OF CONDUCTOR SIZES**

A thrust of 60 tons in a tool weighing only 42 pounds is now possible with the new Alcoa® 60A Compressor. Designed to apply compression fittings on ACSR or stranded aluminum conductors up to two inches in diameter, the new compressor offers more versatility than any other tool available today. Hand- or power-operated pumps are available for the compressor. For more information on the model 60A compressor, contact your Alcoa representative or write Aluminum Company of America, 2314-F Alcoa Building, Pittsburgh 19, Pa.

Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA

THE ALCOA HOUR—Television's Finest Live Drama, Alternate Sunday Evenings



HOISTING BAIL for hand line is a permanent part of compressor unit. Flexible steel cable prevents accidental dropping of head when placing compressor over fitting.

ONE MAN handles compressor, other operates gasoline-engine pump. Power pumps have been used 75 ft from the compressor.

SIMPLICITY with light weight is chief advantage of new Alcoa 60A Compressor. Pump and compressor operate in any position; use SAE 10 motor oil.

THIS MONTH'S NEWS

Contract Signing Starts Pelton Project of PGE

Signing of a $6,534,349 contract with Guy F. Atkinson Co. has put Portland General Electric Co. deeper into the Pelton project on the Deschutes River at the same time Oregon Attorney General Robert Y. Thornton is saying the company is violating the state's water use laws.

Thornton had informally expressed the same opinion before and had advised the Jefferson County district attorney that criminal action against PGE should be initiated. However, Thornton has no authority to compel county officials to take such action.

Clarification of the legality is expected to come from a case pending before the Oregon Supreme Court.

In the meantime, PGE is building the project and is still cooperating with game and fish interests in arriving at an agreeable plan for fish passing facilities. This portion of the project is still subject to final approval by the Federal Power Commission.

Work is shown underway on Portland General Electric's Pelton project, Deschutes River

Priest Rapids Power Is Taken by 12 Purchasers

Grant County PUD, Ephrata, Wash., has successfully negotiated 12 contracts with 12 Washington and Oregon utilities for sale of power from its proposed Priest Rapids Dam. The same 12 utilities also have options on power from Wanapum Dam, which will be started later.

Merritt-Chapman & Scott, New York contractor, has been notified that the PUD will sign a contract for the project as soon as bonds are sold.

The 630,000 kw from Priest Rapids will be divided between Portland General Electric Co. and Pacific Power & Light, 87,570 kw each; Puget Sound Power & Light, Tacoma City Light and Seattle City Light, 50,400 kw each; Washington Water Power Co., 38,440 kw; Cowlitz County PUD, 12,600 kw; city of Eugene, Ore., 10,710 kw; Forest Grove, McMinnville and Milton-Freewater, Ore., 3,150 kw each; and Kittitas County PUD, 2,520 kw.

Grant County PUD retains 56.5% of Washington's share of the Priest Rapids output, or 230,000 kw.

Bonds can now be sold.

• **Public hearings** by the Federal Power Commission on the proposal of the Pacific Northwest Power Co. to build Mountain Sheep and Pleasant Valley Dams on the Snake River will be held June 18 at Pendleton, Ore., and June 21 in Lewiston, Idaho.

Grand Junction Will Get New Steam-Electric Plant

Construction will begin by July 1 on a new $4,500,000 steam-electric generating plant on the Colorado River near Grand Junction, Colo., according to an announcement by Public Service Co. of Colo.

To be called the Cameo plant, the station will have a capacity of 22,000 kw for western Colorado use.

• **Surcharges** collected by three Oregon utility companies during a 1952 water shortage have been declared legal by the state supreme court. The utilities are Pacific Power & Light, Portland General Electric Co. and Mountain States Power Co., now part of PP&L. Refund asked by a group of customers amounted to about $500,000.

Two Sites Remaining For Corps' John Day

Tentative sites for John Day Dam have been narrowed to two by the Army Corps of Engineers. Scholfield Rapids and Indian Rapids on the Columbia are the two possible locations.

Col. Myron Page Jr., Walla Walla district engineer, said engineers favor the Scholfield site on a comparative analysis of the benefit-to-cost ratio. Final decision will hinge on further study of rock formations.

Seattle Customers Get Substantial Rate Cut

Two groups of Seattle City Light customers would receive rate reductions totaling $500,000 annually under a new rate schedule proposed by Superintendent Paul Raver. The city council has given preliminary approval and scheduled effective date is May 31.

Approximately 1,500 commercial customers using more than 3,000 kwh per month will receive $300,000 of the annual savings. Some 135,000 residential customers on the all-electric rate will save a total of $200,000 annually.

Hotpoint

Electric Water Heaters

With Performance and Features That Build Preferred Acceptance ... and Utility Revenue!

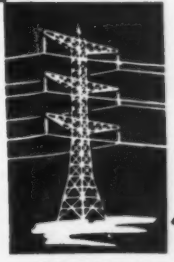
Almost *one-third* of the electric water heaters in use today were manufactured by Hotpoint—positive proof that Hotpoint has the acceptance that helps build *your* revenue!

Take advantage of this constantly growing preference. Promote Hotpoint Water Heaters . . . the *pre-sold* line that promotes acceptance through forceful national advertising . . . and helps *you* promote with a hard-hitting, *local* merchandising program designed specifically for utility use!

Learn all the facts about Hotpoint Automatic Electric Water Heaters from your local Hotpoint Distributor. He will be happy to help you build assured revenue for the future with Hotpoint.

- **Hotpoint Water Heaters are available in a full range of sizes, in both round and table-top models.**
- **Famous Magic Circle® Heat—Calrod® heating units transmit heat to the water by conduction—the most direct and efficient method.**
- **New Low Prices—lowest in 10 years—help expand your electric water heater market!**
- **New Colortones—table-top models come in 5 colors as well as white!**
- **New Super-Speed—40-gallon quick-recovery models ready for shipment.**

Again, Hotpoint



looks at Tomorrow, Today!

HOTPOINT CO. *(A Division of General Electric Company)* **5600 West Taylor Street, Chicago 44, Illinois**

SPECIFY **light poles of pressure-treated wood**

Communities, power companies and highway departments have discovered that for street and highway lighting pressure-treated wood poles offer strength, a blend with the natural setting, and *outstanding economies.* They are less expensive than metal poles in first cost, installation cost and annual cost. They do not require painting.

WOOD POLES COST LESS THAN ½ AS MUCH AS METAL

McCORMICK & BAXTER SUPPLIES STRAIGHT, STRONG, MACHINE-PEELED DOUGLAS FIR POLES PRESSURE-TREATED WITH PENTACHLOROPHENOL OR COAL TAR CREOSOTE.

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CREOSOTING COMPANY
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TREATING PLANTS...PORTLAND AND STOCKTON

Canadian Aluminum Run Increased by Third Unit

Aluminum Co. of Canada last month boosted the flow of aluminum from its Kitimat smelter in northern British Columbia to 120,000 tons per year, an increase of 30,000 tons. To do this it opened its third furnace line, completing the first stage of an operation that eventually will produce 550,000 tons annually.

If the present schedule is maintained, the company will be producing 180,000 tons by the end of 1956; will add 30,000 tons in 1957; 60,000 tons in 1958 and another 60,000 in 1959.

To reach its ultimate goal, it must bore a second 10-mile tunnel through the coast range to Kemano power house. A fourth generator went on the line at Kemano in March and another 105,000-kw unit is scheduled for later this year. Three more generating units are to be installed during the next four years and Kemano will have 900,000 kw by 1960, one-half plant potential.

Colorado Cooperatives Report New High Sales

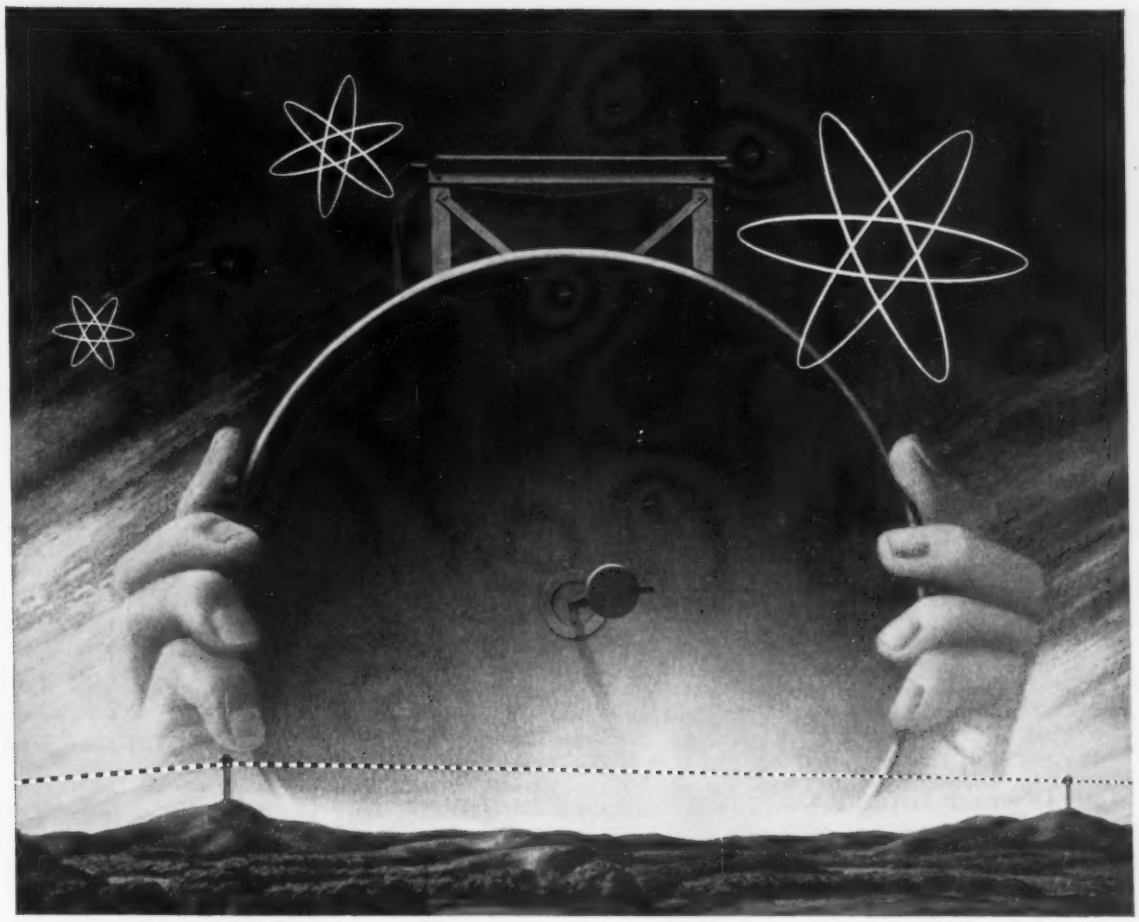
Colorado's 22 rural electric cooperatives consumed 327,199,214 kwh in 1955, up from 276,906,421 kwh in 1954. Sales totaled $10,000,000, a gain of $1,100,000 over 1954, according to the Colorado Rural Electric Assn.

The association reported that increased power consumption by ranch and farm members in the state has virtually exhausted existing supplies. Average power consumption on rural lines rose to a new high of 297 kwh per month in 1955, compared with 103 in 1945.

• **Proceedings** of the World Symposium on Applied Solar Energy have been published by Stanford Research Institute for the Association for Applied Solar Energy. First distribution will be to the 800 registrants of the symposium held last November in Phoenix. The 300-page publication sells for $5. Orders and inquiries should be directed to John I. Yellott, secretary for the association, 204 Heard Bldg., Phoenix.

• **Despite the Westinghouse strike,** Seattle City Light will get its fourth 90,000-kw generator installed this year in its Ross power house, although not quite as soon as originally had been scheduled. The original contract called for the generator to be in service by Oct. 1, but the strike canceled these plans. Under the new schedule, the unit will go on the line before Jan. 1.

FEDERAL MICROWAVE—"CERTIFIED BY A WORLD OF RESEARCH"



Before buying microwave today... look at tomorrow!

What new types of applications will industry expect of microwave communication in the years ahead?

This is a vital question for microwave buyers in this electronic and atomic age, when science, industry, and communication are moving forward so rapidly. Before the final decision is made there should be assurance that microwave techniques will keep in step... always be ready to *interwork with progress!*

With *Federal* Microwave this assurance is an inherent part of the system... and to a unique degree. Working constantly in laboratories and microwave factories in many countries are hundreds of scientists and engineers of International Telephone and Telegraph Corporation... finding new applications for microwave... advancing the capabilities and performance of associated equipment, such as telephone, carrier, and VHF mobile radio.

IT&T's never-ending activity provides the greatest possible protection for today's microwave investment... the finest assurance that the applications of tomorrow will be met by *Federal* Microwave... the system whose future is *"Certified by a World of Research!"*

Federal

A DIVISION OF IT&T

Federal Telephone and Radio Company

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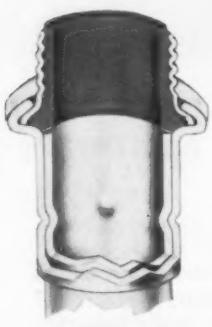
In Canada: Standard Telephones and Cables Mfg. Co. (Canada) Ltd., Montreal, P. Q.
Export Distributors: International Standard Electric Corp., 67 Broad St., New York

B-M INDENTER TYPE FITTINGS FOR E.M.T. Concrete-tight

Rod Throat
Insulated
Connector



Rod Throat
Cross section

Briegel, the Original Indenter Fittings are neater in appearance, easier and faster to use. Installation is simple and less expensive. Two quick squeezes sets them forever. Try B-M Indenter Fittings and get more profits from each job.

All B-M Indenter Fittings are U.L. Approved as concrete-tight and for general use (File Card E10863). Also comply With Federal Specifications W-F-406.

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TELESCOPE BM SYSTEM

BRIEGEL METHOD TOOL CO.

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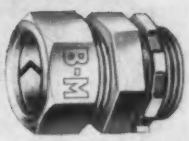
B-M COMPRESSION TYPE FITTINGS
FOR E.M.T. Rain-tight

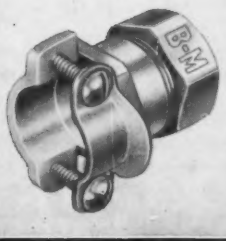


SIZES FROM ½" to 2"

SIZES FROM ½" to 2"

SIZES ½" ¾" 1"

SIZES ½" ¾" 1" 1¼"



SIZE ½"

BRIEGEL METHOD TOOL CO.
GALVA • ILLINOIS

Partnership Proposed On Yellowtail Project

Montana Power Co. and Pacific Light Co. have submitted a proposal for development of Yellowtail Dam in partnership with the federal government.

Terms of the offer are that the utility companies would build the power plant and facilities to transmit power, the government would build the dam and irrigation facilities. The two companies propose to pay the government $1,142,000 annually for use of the reservoir and falling water.

Free energy would be provided by the companies to the Hardin irrigation pumping plant in return for taking irrigation water below the dam, and they would sell additional energy to irrigation users for 2.5 mills per kwh.

The proposal has been submitted to Clarence E. Davis, Under-Secretary of the Interior.

Plains REA Gets Loan For Generating Plant

An REA loan of $3,905,000 has been made to Plains Electric G&T Cooperative, Albuquerque, for construction of a 16,500-kw steam generating station.

At the same time, the REA approved a contract between Plains and Public Service Co. of New Mexico for delivery of 10,000 kw of firm power at Albuquerque and a reserve of 16,500 kw.

Plains received its first loan in 1952 and constructed a plant with two 16,500-kw units. It supplies nearly all the requirements for about 11 new Mexico distribution co-ops.

Settlement Seen In Lewis River Dispute

Possibilities seem to be good for an amicable settlement of Cowlitz County PUD's last minute intervention in the Swift project of Pacific Power & Light Co. on the Lewis River.

The PUD, in an effort to gain ownership of all Lewis River projects, has filed a condemnation action against PP&L's existing Yale and Merwin Dams and is intervening in the Swift project, just getting under way. The PUD then proposed that PP&L purchase all the power from the dams, with the PUD retaining the right to take as much as half of the Swift output upon two years' notice.

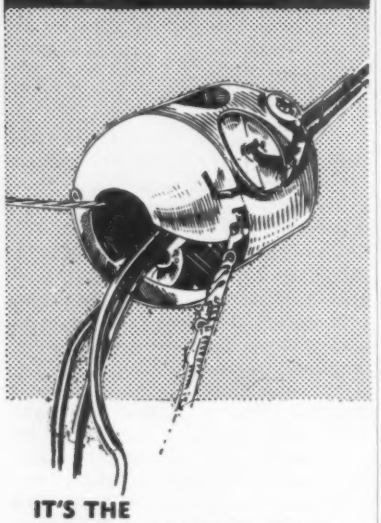
Although PP&L rejected the first proposal, several counteroffers were made and are being considered by both parties now. In the meantime, construction of Swift is under way with Guy F. Atkinson Co. building a diversion tunnel at a cost of $1,814,315. PP&L has an agreement for reimbursement if the PUD gains control of the project.

• **Washington Water Power** Co. has offered Citizens Utilities Co. $950,000 for its transmission and distribution facilities. Citizens serves about 2,500 rural and small community customers in parts of Spokane, Stevens and Pend Oreille Counties, and is presently a wholesale customer of WWP.

• Gov. Arthur B. Langlie of Washington has announced candidacy for Republican nomination for a seat in the U. S. Senate. If nominated, there is little doubt that power will be a campaign issue. He has supported private development of the Snake River and opposed Tacoma's Cowlitz project.

NEW WAREHOUSE and office of Maydwell & Hartzell's Portland District is shown here as it appeared shortly after completion last month. The building is located at NW 23rd and Vaughn. Constructed by Monson & Silvers Co.; architect, Gordon Kee Cochran. The building has about 10,000 sq ft with 600 for offices, and a 4,000-sq ft parking area

THREE TO ONE



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Only the
Model "K" Spinner
PLACES & SPINS
THREE SINGLE CABLES
Into
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ALSO SPINS SINGLE CABLE PERFECTLY

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Pirelli of Great Britain

Bids and Contracts

• **Maxwell-Simson & Associates** Ltd., Vancouver, B. C., has been awarded a contract for three 3,000-kw trifuel generating units for the Dawson Creek plant of British Columbia Power Commission. The Cooper-Bessemer units will cost $1,135,000. The firm had earlier been awarded a $2,600,000 contract for seven similar units for use at Prince George and Quesnel.

• **C. H. E. Williams** Co. Ltd. has received the subcontract for the electrical installation in Killarney junior-senior high school, Vancouver, B. C.

• **Hume & Rumble** Ltd. received a contract to wire a new three-story office building for the Powell River Co., Powell River, B. C.

• **Bailey Electric** will do electrical installations in a Port Alberni elementary school.

Bonneville Contracts With Several Companies

Bonneville Power Administration has announced awarding several contracts recently. They are as follows:

North Idaho Construction Co., $155,638, for construction of schedules one and three of the Reston-Fairview 230-kv transmission line;

Power Line Erectors Inc., $259,473, for clearing and construction of the first 20 miles of Alvey-Reston 230-kv line;

Loftkin & Robinson, $47,000 for construction of additions to Tillamook substation;

George S. Smith, $21,629, for construction of 115-kv switchyard at Snohomish substation;

Motorola Communications & Electronics Inc., $17,904, for supervisory control equipment;

Herbert R. Jones Engineering Co., $35,680, for right-of-way surveys and maps for the Shelton-Fairmount 115-kv transmission line;

Midland Constructors Inc., $195,145, for reconductoring portions of the McNary-Wishram section of the McNary-Ross 345-kv line;

Western Electrical Construction Co., $54,600, for construction of transformer bank additions and terminal facilities for the Shelton-Olympic 230-kv transmission line at Olympia substation;

Aluminum Co. of America, $10,887, for ACSR conductor on bid invitation 7948;

F. E. Wilder, $146,450, for construction of the 20-mile Olympia-Shelton transmission line.

• **H. D. Mainwaring** Co. Ltd. has the electrical subcontract for a new addition to the main branch of the Bank of Montreal in Victoria. The company will also wire a swimming pool extention to the gymnasium at Royal Roads.

• **The Shea** Co., Alhambra, Calif., will build a diversion tunnel and detour at western Oregon's Hills Creek reservoir for the Corps of Engineers. Amount of the contract is $957,280.

• **Guy F. Atkinson** Co. has been awarded a contract for $1,814,315 to construct a diversion tunnel for Pacific Power & Light's Swift Creek project on the Lewis River.

• **Parker Schram Co.,** Portland, was low bidder at $37,539 for construction of Bonneville's McNary power house switchyard line No. 6 and McNary-Big Eddy tower No. 11.

• **Power City Electric** Co., Spokane, was low with $93,880 for relocating the Spokane-Hot Springs 230-kv transmission line of Bonneville Power Administration.

Two Alaska Hydro Sites Have Large Potential

Warren George of the Corps of Engineers told an Anchorage, Alaska, power conference that two hydroelectric sites in Alaska have greater potential than any existing dam in the United States.

He said a dam in Rampart Canyon on the Yukon would produce 3,100,000 kw and a dam at Kaltag on the same river would have almost as great a capacity.

George's estimate of the potential for the entire territory is about 15,000,000 kw.

• **Montana Power** Co. has started engineering work on the $15,000,000 Harry Cochrane hydroelectrical project on the Missouri River near Great Falls. A Federal Power Commission license was received late in April.

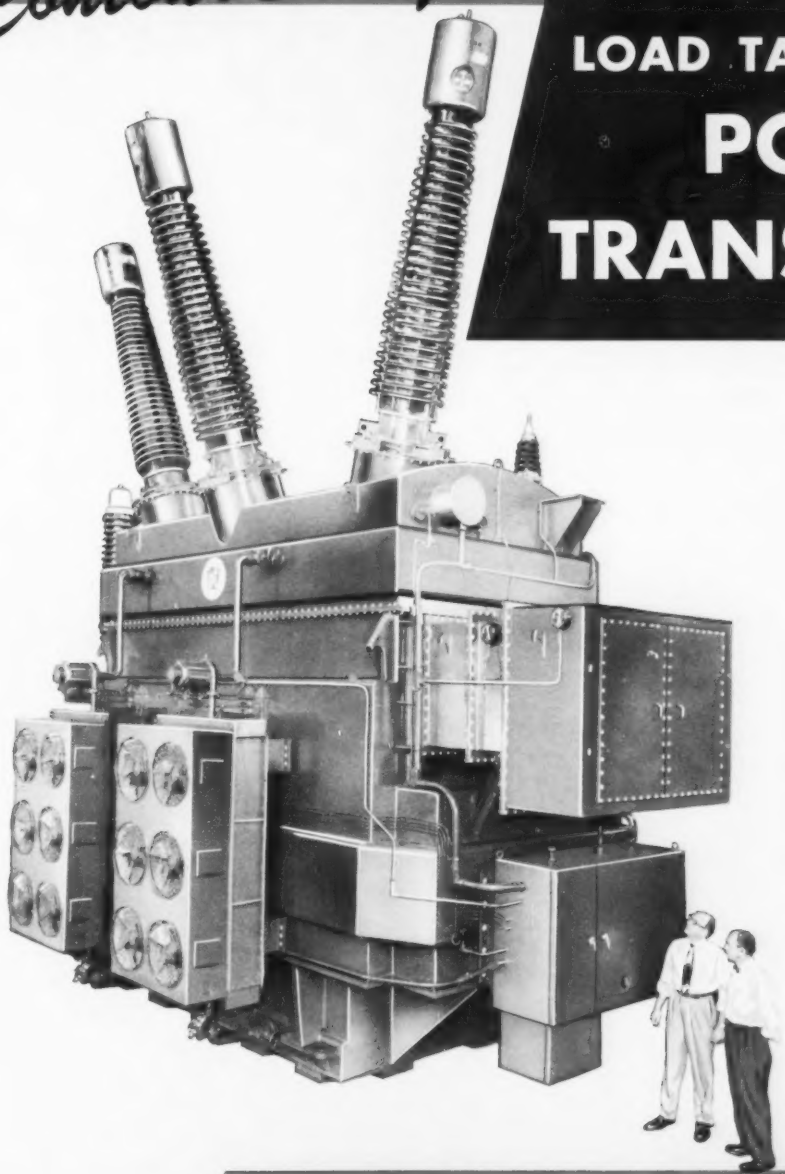
•The Los Angeles Water & Power Department plans to request a place on the November general election ballot for a proposed city charter amendment that would allow an increase in the amount of revenue bonds that can be issued by the department. It now has authority to incur a bonded debt, without voter approval, of approximately 50% of investment; is asking that the ratio be raised to a limit of 57.1%.

100,000 Kva, 330 Kv

THREE PHASE.....

Contour Design

PENNSYLVANIA LOAD TAP CHANGING POWER TRANSFORMER



The efficiency and compactness of Pennsylvania's shell-form Contour Design were "made to order" for this 100,000 kva, 330 kv transformer — one of the largest ever built from the standpoint of voltage. The unit will step down a transmission-line voltage of 330,000 volts to the 14,400 volts required for plant distribution. Its features include corona-free high-voltage coils with uniform impulse voltage distribution . . . and Pennsylvania's new high-capacity load tap changing equipment, designed for applications through 150,000 kva. The forced-oil cooling system has four oil-to-air heat exchangers.

pt

PENNSYLVANIA TRANSFORMER COMPANY

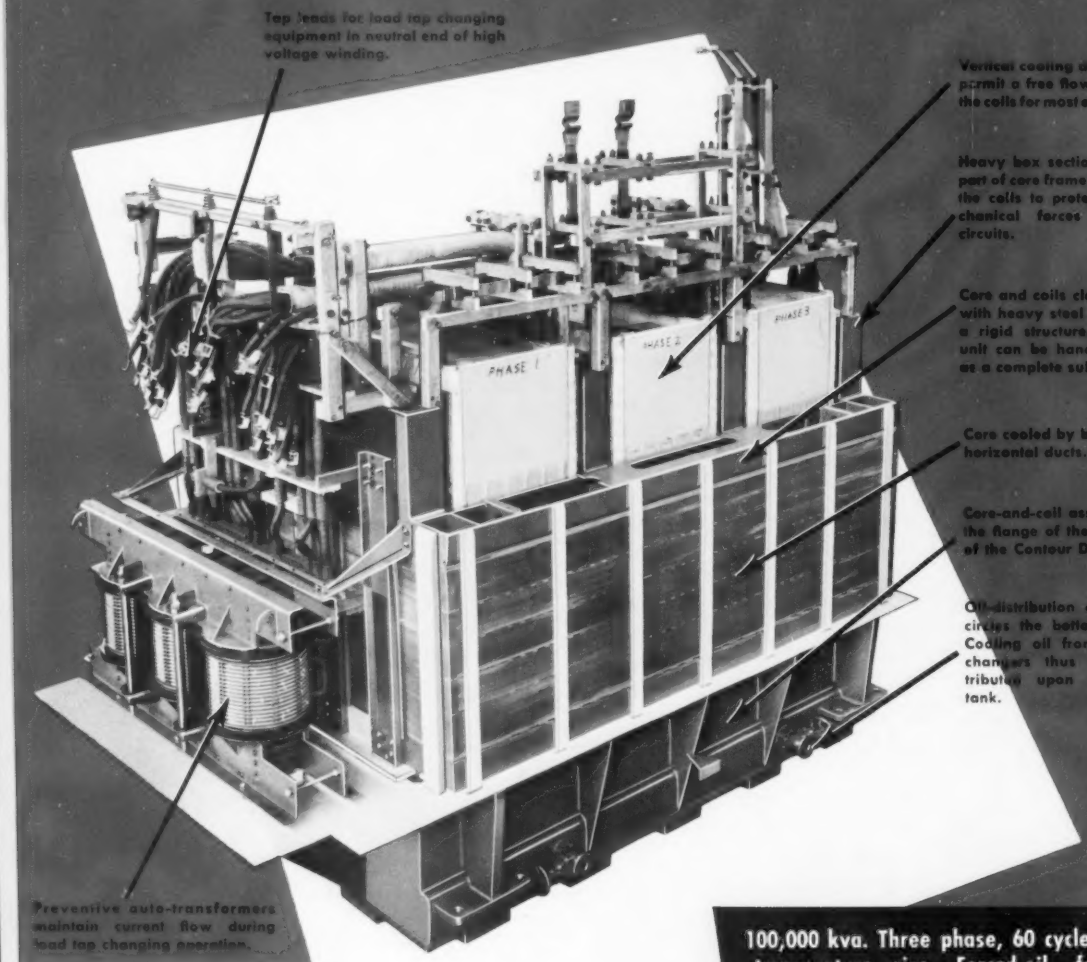
A McGraw Electric Company Division

CANONSBURG, PENNSYLVANIA • *Greater Pittsburgh District*

see next page for inside story

inside a
100,000 Kva, 330 Kv

THREE PHASE *Contour Design* PENNSYLVANIA LOAD TAP CHANGING
POWER TRANSFORMER



Tap leads for load tap changing equipment in neutral end of high voltage winding.

Vertical cooling ducts in the coils permit a free flow of oil through the coils for most efficient cooling.

Heavy box sections which form part of core frame securely clamp the coils to protect against mechanical forces during short circuits.

Core and coils clamped together with heavy steel frames to form a rigid structure. Core-and-coil unit can be handled separately as a complete sub-assembly.

Core cooled by both vertical and horizontal ducts.

Core-and-coil assembly rests on the flange of the bottom section of the Contour Design tank.

Oil-distribution duct completely circles the bottom of the tank. Cooling oil from the heat exchangers thus is evenly distributed upon re-entering the tank.

Preventive auto-transformers maintain current flow during load tap changing operation.

100,000 kva. Three phase, 60 cycles, 55° C. temperature rise. Forced-oil, forced-air cooled. High voltage: 330,000 Grd. Y volts. Low voltage: 14,400Δ volts. Load tap changing equipment for ± 10% regulation in 32 steps of 5/8%.

PENNSYLVANIA TRANSFORMER COMPANY

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For external view, see other side.

Large Washington Site Discovered by Engineer

A Spokane engineer thinks he has located a water storage site previously overlooked—one that could store 4.5 million acre-ft and produce 696,000 kw from its own generating facilities. The site would supply downstream flow for added generation of 600,000 kw, and flood control of 38,000 cfs, roughly the flow of the Pend Orielle River at normal runoff.

Fantastic as it sounds that even a potential bucketful of storage has been by-passed, the Corps of Engineers believes there is enough merit in the scheme to order it studied. The North Pacific Division engineer, Brig. Gen. W. H. Foote, has ordered the Seattle district office to look into the plan.

The engineer, Carl R. Dion, visualizes two earth and rock dams to store water in Omak and Goose Lakes in north central Washington. The lakes lie in an abandoned river bed which would become a reservoir when dammed. The reservoir would be connected to Lake Roosevelt, behind Grand Coulee Dam, by a 29-mile pair of canals, and would store water from Lake Roosevelt.

During high water, overflow from Lake Roosevelt could be pumped into the new reservoir and during low periods, it could be drawn down. Dion sees a power house located on Lake Rufus Woods, the reservoir behind Chief Joseph Dam, with reversible pumps to permit taking water from it or putting water in.

The power house would have eight generators to produce 696,000 kw.

The land is now largely unused, and there are no major highways or rail lines to be relocated. Dion estimated the cost of the storage and power project at $195,000,000.

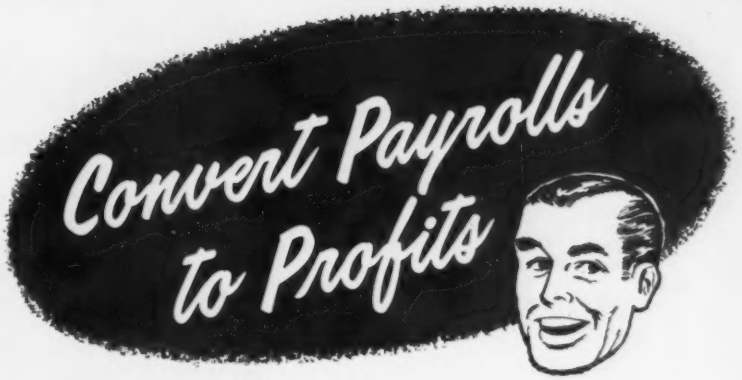
Hoover Generation Hurt By Low Lake Mead Level

Power generation at Hoover Dam during the coming year is expected to be held to about 60% of the firm energy commitment, as it was last year.

Curtailment is necessary because the level of Lake Mead has reached an all-time low as result of three consecutive years of below average runoff. Another bad year is in prospect.

Water releases through Hoover turbines for the year starting June 1 are expected to be based on downstream irrigation and domestic requirements, as they were last year.

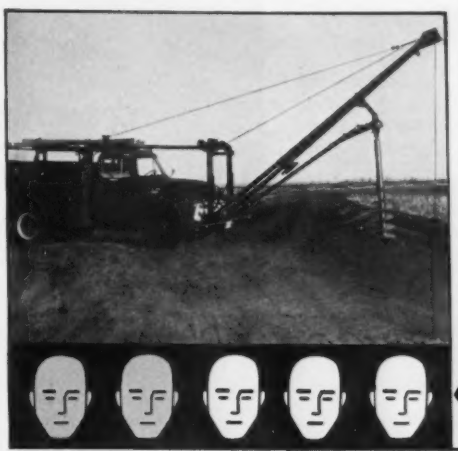
During year ending May 31, Hoover turbines generated 2,608,000 kwh, 62.7% of firm energy commitment.



Tel-E-Lect's complete line of front operated equipment now enables utility companies to do twice the amount of work with smaller crews in just half the time. If you're still using 5-man crews on obsolete utility equipment (even on a new chassis), you have extra men on the payroll that can be making a profit for you on another job. Tel-E-Lect builds the services of three men into its utility truck equipment. Now, *two men* can do the work once done by five!

Adaptable to all makes of popular trucks, Tel-E-Lect quality-built front operated equipment is fast and versatile. The simplicity of operation of its winches, digger drive kits, FLD units, derricks, diggers and augers make them efficient and economical—require smaller crews to operate, thus freeing men for other jobs and for big, highline work.

After just *two minutes* on location, the digger and derrick are ready to go to work. Digger and derrick equipment are brought into working position by simply engaging winch line. The digger remains attached to the derrick and is raised or lowered by actuating a single lever in the cab. The load line is now available for pole setting. When digging in hard soil or frozen ground, the weight of the pole may be used as ballast for additional auger pressure.

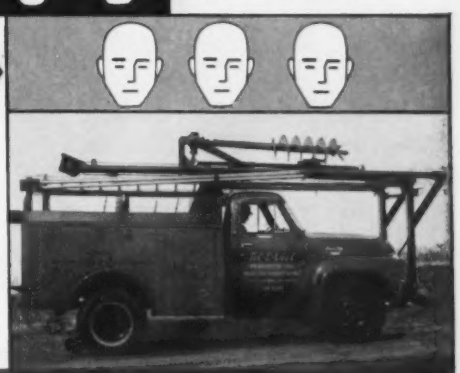


Tel-E-Lect equipment saves three men out of five for other work.

These men are now available for other important jobs!

Compact, custom-built bodies and utility equipment by Tel-E-Lect are capable of handling the major portion of Telephone and Power Co. work. This unit is shown with derrick and digger stowed overhead for travel.

Distributed by: Am. Equipment & Body Co., Los Angeles 33; Robblee's Utility Equip. Co., Seattle; Utility Body Co., Oakland 7; Williamsen Body & Equip. Co., Ogden and Salt Lake City, Utah; Pocatello, Idaho.



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FIRST TO BE MOLDED IN NEW HY-BUTE ⚡60* INSULATION

ACTUAL SIZE

G.E.'s New 15-kv Instrument Transformer Mounts Easily; Needs Less Maintenance

LIGHT AND MORE RUGGED, TYPE JKW-5 MOUNTS IN ANY POSITION

General Electric's discovery of an internal oxidation mechanism which can be added to ordinary butyl to prevent arc-tracking now makes feasible the molded construction of outdoor current transformers in the higher voltage ranges. This new compound, Hy-Bute/60 insulation, gives you seven big advantages in the new type JKW-5 15-kv instrument transformer.

NEW JKW-5 REPLACES 3 TRANSFORMERS because it can be mounted in any position. It supersedes the bottom, top and side-connected designs. This simplifies stocking and maintenance problems.

CORROSION-RESISTANT materials—new Hy-Bute /60 insulation, stainless steel and copper—virtually eliminate necessity for maintenance.

WEIGHS 20% LESS than older type, top connected transformer of the same rating.

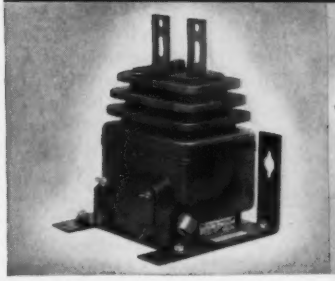
SMALLER SIZE coupled with lighter weight makes the General Electric JKW-5 easier to install. The new transformer, shown here in actual size, measures only 15¾ inches high, 10⅞ inches wide and 9½ inches long.

NO PORCELAIN BUSHINGS to crack because new Hy-Bute/60 serves as bushing, insulation and case on the new JKW-5. This feature removes possibility of failure which might occur as a result of thermal shock or external damage to porcelain bushings.

SAFER OPERATING, General Electric's Hy-Bute/60 insulated transformers cannot explode or catch on fire like older types.

LONGER LIFE is assured because Hy-Bute/60 insulation is mechanically tough, chemically inert, heat resistant, impervious to severe weather conditions and has high dielectric strength.

YOU GET SIMILAR BENEFITS IN OTHER MEMBERS OF G.E.'S BUTYL FAMILY



JKW-3 5-kv current transformer is available for outdoor applications

JKM-5 15-kv current transformer for indoor applications

JCP-0 600-volt current transformer for high-current indoor/outdoor applications

For more information about the new JKW-5, contact your nearest G-E Apparatus Sales Office or write for Bulletin GED-2727 to Section 581–2, General Electric Company, Schenectady 5, New York. For information about General Electric's complete line of instrument transformers, request Bulletin GEC-1028. 581-2

*Trade-mark of General Electric Co.

GENERAL ELECTRIC

SURGICAL LINE CLEARANCE BY DAVEY

Davey is doing line clearing for 12 Public Utilities on the Pacific Coast —most of them served continuously for over 20 years. Davey specialized equipment and efficient methods save money . . . Davey surgical pruning benefits trees—builds goodwill.

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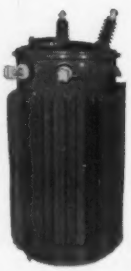
A NEW APPROACH TO INSULATING PROBLEMS

Layer insulation for transformers with

Electro self-bonding lectronic board

easier to use
saves winding time
provides plus protection

insulation is where you need it



ELECTRO PRE-IMPREGNATED LECTRONIC BOARD offers an improved method of insulating transformers. When used as layer insulation you're sure of a varnish bond all the way through . . . the base paper is coated with a heat activated resin. The coil assembly is assured of uniform protection against failure as the laminating action of the LECTRONIC BOARD, after being subjected to heat, forms a compatible bond with the varnish dip. WRITE FOR COMPLETE INFORMATION TO DEPT. E14-681.

A Division of Sun Chemical Corporation

Electro-Technical Products
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Colorado-Ute Directors Locate Plant at Nucla

Colorado-Ute Electric Assn. directors have voted 5-3 to construct a new $10,000,000, 23,500-kw REA electric generating plant at Nucla in southwestern Colorado.

Colorado-Ute is composed of representatives of four REA cooperatives serving the Nucla, Cortez, Durango and Delta-Montrose areas.

A contract is being negotiated with Edna Coal Co. of Denver to mine fuel for the steam plant.

Frank Meaker, president of Colorado-Ute, said construction waits only on completion of the Edna contract and REA approval. He said approval was a formality and would probably take about a month.

Large Balch Expansion Started by PG and E

Pacific Gas and Electric Company has started work on a large expansion of its Balch power house as part of the company's King River project 60 miles east of Fresno. The project is being built at a cost of $80,000,000, including transmission lines. Begun last year, the project has been largely closed down since mid-November because of snow.

Enlargement of Balch power house from 34,500 to 126,000 kw and construction of two new plants, the Haas and Kings River power houses, will develop 261,500 kw of additional generating capacity on the river.

There is barely room for the Balch plant in the narrow, granite-walled gorge where it is located. Water is discharged from the turbine into a tailrace channel which had to be built underneath the plant. The first step for expansion of the plant is a careful excavation of this channel to accommodate the additional volume of water required to operate two more turbine-generator units. Work will start soon on terraces or benches which must be blasted from the solid rock to make room for additional transformers and an enlargement of the switchyard.

Bids Are Still Received For PUD Office Building

The Snohomish County PUD of Everett, Wash., is receiving bids until June 26 for construction of a $650,000 office building.

Plans call for a two-story and basement structure 62 x 181 ft, adjacent to the service-center building constructed for the PUD two years ago.

Eugene Receives Offer For Beaver Marsh Job

The Eugene, Ore., Water and Electric Board has received a proposal from a St. Paul, Minn., construction firm to build Beaver Marsh hydroelectric project, finance it, and receive payment through project revenues. The proposal came from Donovan Construction Co.

Voters recently turned down an $8,500,000 bond issue which would have financed the board's proposed Beaver Marsh project. which would be located on the Upper McKenzie River.

EWEB Superintendent R. B. Boals commented that he doubted the plan could be worked out unless a majority of the people of Eugene approved.

B. C. Gas Turbine Plant To be at Chemainus

British Columbia Power Commission has selected a site at Bore Point near Chemainus on Vancouver Island, for construction of its new $15,000,000 gas-turbine thermal power unit.

Negotiations for the land, presently owned by MacMillan and Bloedel Ltd., are nearly completed, the commission reported this week.

The 75,000-kw unit will be second largest generating unit in the commission's system.

PP&L Expanding Office At Cost of $1.5 Million

Hoffman Construction Co., Portland, has begun $1,468,000 worth of construction on the Public Service Bldg. in Portland which will make the headquarters of Pacific Power & Light Co. the largest commercial office structure in Oregon. It already is the tallest building in the state.

Erection of steel for two seven-story additions to the north and south wings (raising the wings to the 12th floor level) will begin about June 1. Completion of the work is scheduled for July 1957.

• **California Electric Power Co.,** Riverside, Calif., has filed an issue of 300,000 shares of common stock with the SEC, to be sold at competitive bidding June 12, in Los Angeles. The proceeds will be used to pay off a short-term loan from Bank of America, used for construction purposes. Construction outlay for plant is estimated at $16,400,000 in 1956, rising to $18,000,000 in 1957. This compares with an actual expenditure of $11,100,000 in 1955.

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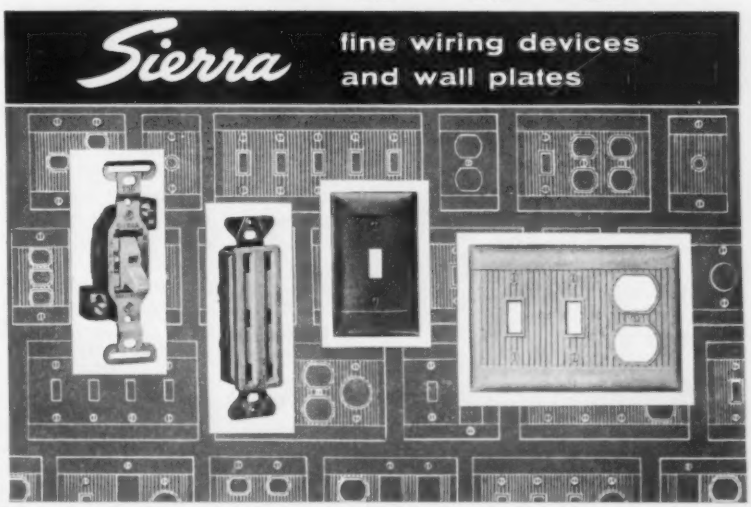

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Thomas Person Yetter

NEWS ABOUT PEOPLE

• **Robert T. Person, Paul A. Yetter** and **Guy W. Thomas** have been selected to fill three new vice-presidencies in the executive organization of Public Service Co. of Colo. Person heads up advertising, publicity, information and employee education activities, Yetter is in charge of the company's division operations and Thomas is head of the commercial department.

• **Lamont J. Brundige** has been promoted to managership of Pacific Gas and Electric Co.'s San Jose division, to succeed the late William R. Bowler. Replacing Brundige as manager of the Sacramento division is **Richard L. Hayden,** San Francisco manager of customer and community services.

• **Lawrence B. Jack** is new director of budgeting and control for British Columbia Electric Co. **John J. Carson** succeeds Jack as industrial relations director.

• **W. H. Knight,** farm electrification project director at the University of Idaho, has resigned to accept a position as head of the engineering extension services at the Institute of Technology, Washington State College.

• **E. Gordon Tallman** has been named senior projects engineer with the British Columbia Power Commission. He comes from the Ontario Hydro.

• **Dr. Otto E. Zwanzig** is designated to take over the position of general sales manager of British Columbia Electric to succeed Howard N. Walters who retired.

• **Col. R. J. B. Page** will succeed **Col. N. A. Matthias** as Seattle district engineer, Army Corps of Engineers, upon the latter's retirement this summer. Page is presently in charge of the Okinawa district.

• **Fred B. Sprague,** sales engineer and director of publicity and public relations for Pacific Gas and Electric Co. in Sacramento, retired after 40 years' service with the company, 34 in Sacramento.

• **Don Frisbee** will be in charge of Pacific Power & Light's new electronic accounting system in the position of assistant treasurer. He has an M.A. from Harvard graduate school.

Savage

• Phillip L. Savage, manager of engineering of General Electric's Pacific Southwest District, is new regional chairman of the American Institute of Electrical Engineers for 1956-57. He heads the Los Angeles Section.

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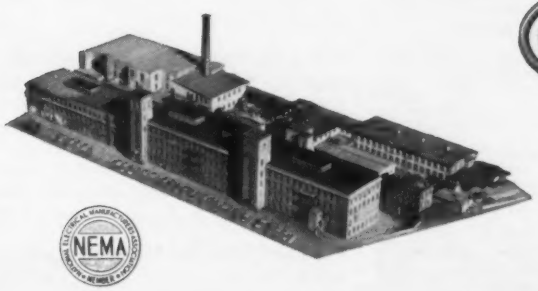

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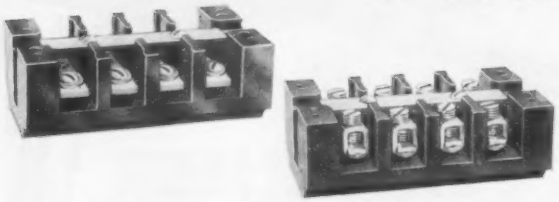

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• **Kelly Kennan** has been appointed San Francisco district sales manager for Robertshaw-Fulton heating appliance controls. His territory covers northern California, Oregon, Washington, Montana, Wyoming and Nevada.

Deaths

• **John Carlos Ryan,** 57, a retired Montana Power Co. vice-president, died at his home in Great Falls, May 22. Born in Denver, Mr. Ryan attended Harvard University and Michigan School of Mines.

• **Fred Orville McMillan,** 65, professor of electrical engineering at Oregon State College and nationally known electrical engineer, died April 28 after finishing a brief speech at a campus dinner meeting. He was immediate past president of the American Institute of Electrical Engineers, and had served as a vice-president from 1934 to 1936. He was graduated with honors from Oregon State College in 1912 with a B.S. in electrical engineering. Continuing his education at Union College, he earned his Masters in 1919. His working career started with General Electric Co. as a student engineer and progressed to electrical engineer with the G-E railway engineering department. In 1920 he began a career of teaching at Oregon State College which continued until his death. He was author of many technical articles receiving wide publication, and was noted for much research contributing to the advancement of the electrical industry.

• **Thomas Loftus,** supervisor of the machine accounting department of the Montana Power Co., died suddenly May 5. He had been with the company 31 years.

• **Wilbur K. Watkins Sr.,** 72, retired general manager of Maui Electric Co., Hawaii, died April 14 of a heart attack. He served as general manager from 1926 until his partial retirement in 1951, and then as consulting engineer and vice-president until March of this year.

• **J. J. Mulholland,** former credit manager for the Butte division of Montana Power Co., died suddenly April 29 in Seattle.

• **Harry Miles Cullis,** retired president of Marshall-Wells Co. of Canada, died at Vancouver, B. C., at the age of 66.

• **Robert Christie,** 58, who retired recently as comptroller of Forsts Ltd., died at Nanaimo, B. C.

NOTES ON THE TRADE

Federal Pacific Jobs Assigned to Three Men

Recent personnel changes announced by Federal Pacific Electric Co. include the appointment of Dr. Paul Wildi as consulting engineer to the Pacific Electric Switchgear Division in San Francisco. He is a specialist in high voltage engineering and research, and comes to California from the Pacific Oerlikon Co., Switzerland. He was chief engineer.

Wayne C. Tustin is now supervisor of air-break switch engineering at the company's Santa Clara plant.

An executive staff appointment announced concerns selection of Philip S. Cannon as assistant to Executive Vice-president T. M. Cole. Cannon was former assistant general manager of the Henry & Wright Division of Emhart.

• **S&W Electric** Co., 2144 Welton, Denver, now represents Feedrail Corp. in Colorado, Montana, Idaho, Wyoming, Utah and New Mexico.

• **Allied Industries,** Los Angeles, has added **Don Shively** to its staff. He is a sales engineer and primarily associated with Tork time switches.

• **Edward D. Heintze** is returning to Denver as sales representative for the Miller Co., manufacturer of commercial and industrial lighting fixtures. He was formerly there with General Electric Supply Co. before joining the Miller organization in 1948. His territory will include Colorado, Wyoming, and parts of Nebraska and New Mexico.

• **Moe Light** Division of Thomas Industries Inc. has named **Rollo Hittle** as sales representative in the Los Angeles metropolitan area.

• **Yale & Towne** Mfg. Co. has appointed **Garnett A. Vining** as Western regional manager in an expansion of sales and service coverage of the Materials Handling Division. He will headquarter in San Francisco.

• **General Electric** Co. reports that **Robert M. Yurkanin** will handle the wiring device line of the Construction Materials Division in San Francisco. He will be at 1853 Folsom St.

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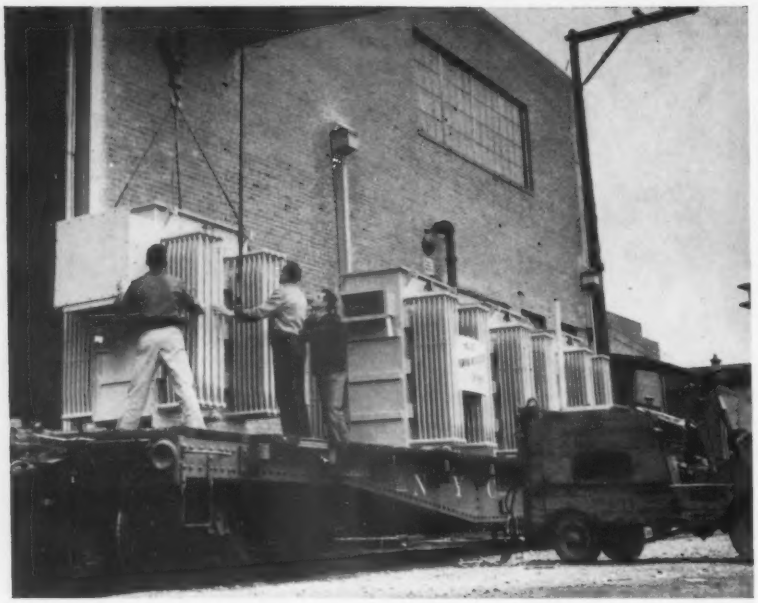

CALIFORNIA-MADE TRANSFORMERS being prepared for shipment here are destined for service in the famous New York-New Jersey Lincoln Tunnel. These are four power transformers of 45 that are being supplied for the tunnel by Gardner Transformer Division of Federal Pacific Electric Co. Pictured are 1,000-kva, three-phase units that will work in conjunction with huge exhaust fans for the tunnel, two at the New York end and two at the New Jersey end. John Allec, William Darch and Wilbur Reddell load them

Celebration June 28 Of Production Mark

Manufacture of the 1,000th multimillion-kva oil circuit breaker by the Pacific Electric Switchgear Division of Federal Pacific Electric Co. will be acknowledged with a celebration in San Francisco June 28.

Delivery of the 1,000th unit will be made to N. R. Sutherland, president of Pacific Gas and Electric Co., on the occasion.

To be held at the San Francisco plant of Pacific Switchgear, the program features displays of various pieces of equipment, including a new experimental air break switch made of aluminum.

• **Prescolite Mfg.** Corp. announces that Lawrence C. Papp and Edward Sholander are new sales engineers in the Los Angeles office.

• **Robert E. Gordon,** recently added to the sales staff of Leadlight Fixture Co., Oakland, will conduct an intensified program of jobber distribution and sales development for the company. He has been in the Bay Area lighting industry since 1950.

• **Oliver G. Leonard** is assigned to the Rocky Mountain region of Allis-Chalmers industries group as a service engineer with headquarters in Denver.

• **Graybar Electric** Co. has made several managerial changes in the West recently. **C. H. "Cap" Wissing,** district lighting manager, San Francisco, is promoted to branch manager at Fresno. **Doral Eardley** moves from Fresno to become manager at Salt Lake City, and **E. E. Leavy** will become assistant district manager at St. Louis.

Wesco Personnel Moves Announced in West Area

Westinghouse Electric Corp. has announced five California personnel changes in April and May.

At Sunnyvale, **Clifford G. Patch** was appointed assistant to the sales manager, **Lawrence D. Gibson** was appointed assistant manager of industrial relations for the Pacific Coast region and **Fred F. Herman,** former manager of ordnance engineering, has been given a new post as manager of a new multimillion-dollar plant to be built by the company at Bloomington, Ind.

Rhule L. Bell is new engineering supervisor of the Huntington Park plant, moving from Sunnyvale.

David P. McIlmoil is now sales application engineer for the Central Pacific district of the electronic tube division. He will headquarter at San Francisco.

• **B. T. Heinz** Co. and **Freeman C. Scharr,** manufacturers' representatives, have both moved to Marina Mart Bldg., 1500 Westlake N., Seattle 9.

• **International Business Machines** Corp.'s newest center, a six-story glass and white marble building, was dedicated in May in San Francisco. From the new center will come IBM's supervision of operations as far east as Denver, and included in it is a service center for custom data processing. The San Franicsco center is only part of the biggest regional expansion program in the company's history, which includes two other large office buildings and a manufacturing plant, all in California.

H. C. Anderson, Western district representative of Southern State Equipment Corp., outlines sales activities for Western manufacturer's agents representing the firm at a meeting in San Francisco. B. A. Franklin, Denver, is at Anderson's right. Seated around the table are: J. C. Platt Jr. and J. C. Platt, Seattle; J. E. Cordell, company sales manager; W. H. Eddy, Phoenix; Donald M. Cobbs, Denver; J. H. Ormand, Oakland; Lee Rawlings, Salt Lake City; and R. D. Andrews, Los Angeles. The group also heard talks by C. W. Leihy, editor of Electrical West, and by J. E. Jennings, Jennings Radio & Mfg. Co.

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But the real long-life service begins when a Kuhlman transformer is installed on the job. For 62 years this type of long-life transformer service to utilities and industries across the country is your proof of Kuhlman dependability. Ask your local Kuhlman representative to explain the many service benefits you now get with Kuhlman in the West.

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Vaill

• **Edwards** Co. Inc. opened its new Western regional office and warehouse in May with an open house. Address of the new facility is 459 E. Fourth St., Los Angeles. Heading up the new regional office is **Richard A. Vaill,** formerly San Francisco district manager.

General Electric News Includes Locke Changes

Included in recent announcements by General Electric Co. was the selection of **Dr. Ralph D. Bennett** as manager of the Vallecitos atomic laboratory that is to be in operation in 1957 at Pleasanton, Calif. He is former manager of The Knolls atomic power laboratory's technical department.

The company has also announced the opening of two factory warehouses for its Locke department, one in Portland, the other in Alameda, Calif. They are the first in the Western region.

General Electric is going to manufacture ERMA electronic data processing machines for the Bank of America. The electronic giant was designed by Stanford Research Institute.

• **Carrier** Corp. has announced plans to construct a new air conditioning, furnace and water heater manufacturing plant at Puente, Calif. The $6,000,000 facility will allow the company to free its present Monrovia and San Gabriel operations for exclusive use by the Aviation Division and Spectrol Electronics Division, respectively. Completion of the huge modern plant is expected in 1957.

• **Arthur O. Williams** is a newcomer to the Peerless Electric Co. staff of lighting sales engineers. He is assigned to the San Francisco-Oakland territory.

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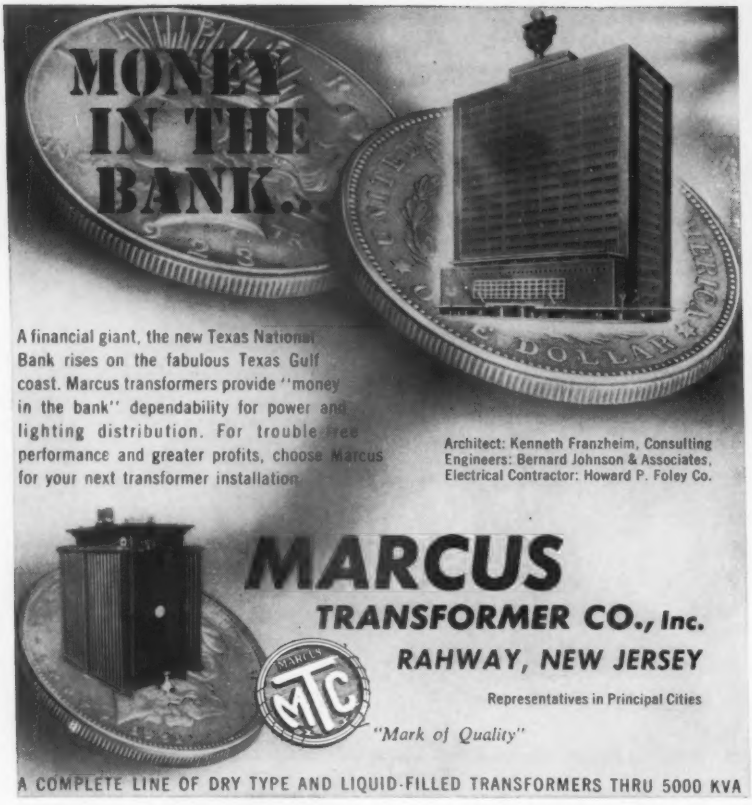
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A COMPLETE LINE OF DRY TYPE AND LIQUID-FILLED TRANSFORMERS THRU 5000 KVA

Helbock

• **George Helbock** is new Denver district manager for Square D Co. He was formerly manager of the Portland office. His new position includes managing the company's $400,000 branch assembly plant now under construction.

• **Platt Electric Supply** Inc., Portland, has been appointed a distributor for Clark Controller Co. The complete line of motor control equipment will be handled in Oregon, Washington, Idaho, Montana, Alaska and Hawaii.

• **J. T. Barclay** has replaced **E. D. Mairs** as manager of Aluminum Co. of America's Vancouver, Wash., fabricating works. Mairs becomes manager at Lafayette, Ind. **L. W. Meyer** moves from Pittsburgh to be assistant manager.

• **Progress Mfg. Co.**, Philadelphia, is acquiring **Marvin Electric Mfg. Co.** of California in a Progress diversification and expansion move. Progress makes fluorescent and incandescent fixtures for homes; Marvin makes recessed and surface mounted fixtures, kitchen ventilating fans and special lighting equipment.

• **John R. Matzinger Co.**, 275 Brannan St., San Francisco, now represents Sperti Faraday Inc. in northern California.

• **Johnson & Phillips Canadian Sales** Ltd. is a new company in Vancouver, B. C., and on Annacis Island. It was formed by amalgamation of Victoria Marine Electrical Engineering Co. and British interests. Products include high- and low-voltage switchgear, transformers and other industrial equipment.

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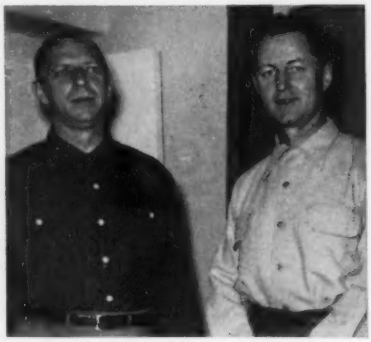
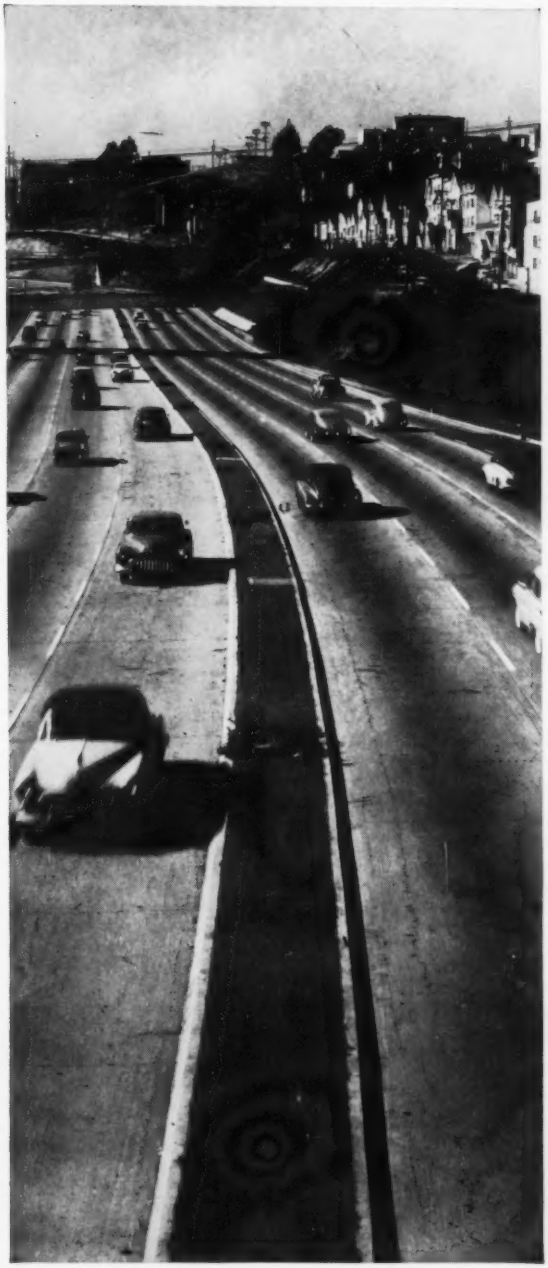


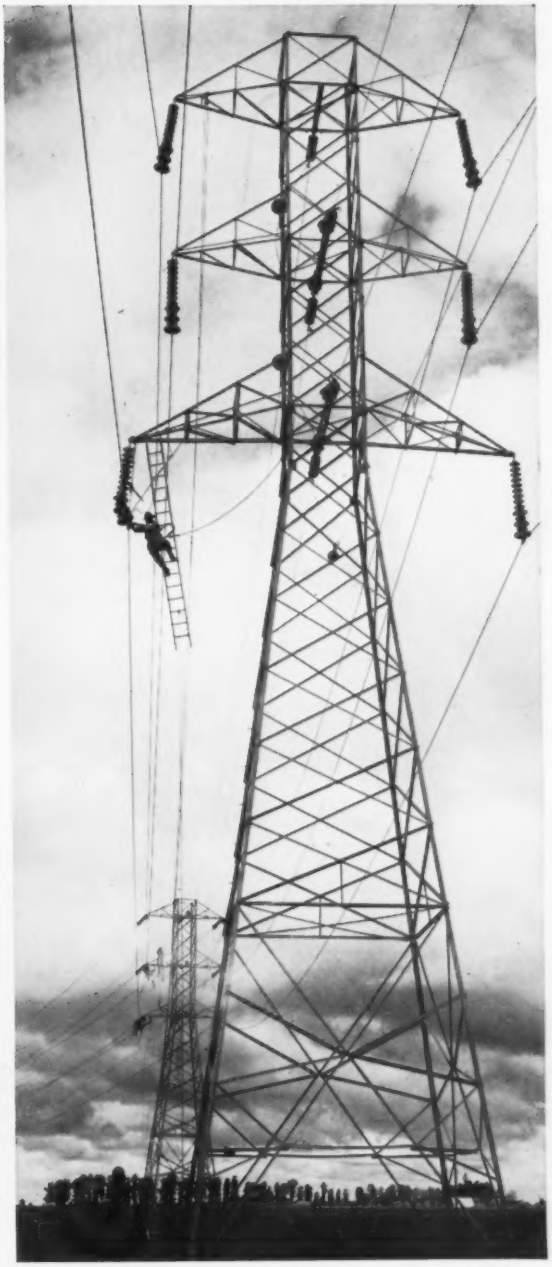
R. C. Schey (left, above) is Northwest district manager and W. W. Bryan Pacific district manager of General Electric's Construction Materials Division in promotions made after Dan Flinn joined American Factors Ltd. in Hawaii. Schey will headquarter at Seattle and Bryan at Los Angeles

Randall Johnson (upper left photo), Washington Water Power Co.'s advertising supervisor, accepted six national awards for his company at the recent convention of the Public Utility Advertising Assn. in Philadelphia. Nine other Western utilities won awards in the PUAA competition for advertising excellence in 1955. See story, p 170

Robert F. Wimer, 22 (left), has been awarded Pacific Gas and Electric's John A. Britton Silver Medal for Distinguished Service. Last August he courageously scrambled and slid down a 275-ft granite cliff to save the life of Paul A. Spencer who had fallen from the same precipice into a pool of water. Wimer pulled Spencer onto the bank, treated him until other assistance arrived

Talking things over at the NELPA conference in Seattle are James A. Bell, director of utility sales, Hotpoint, Chicago; D. J. McGonigle, general sales manager, Montana Power Co.; E. J. Sorenson, manager of special markets for Hotpoint; Pat Johnson, vice-president in charge of sales for Puget Sound Power & Light, host company for the conference





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